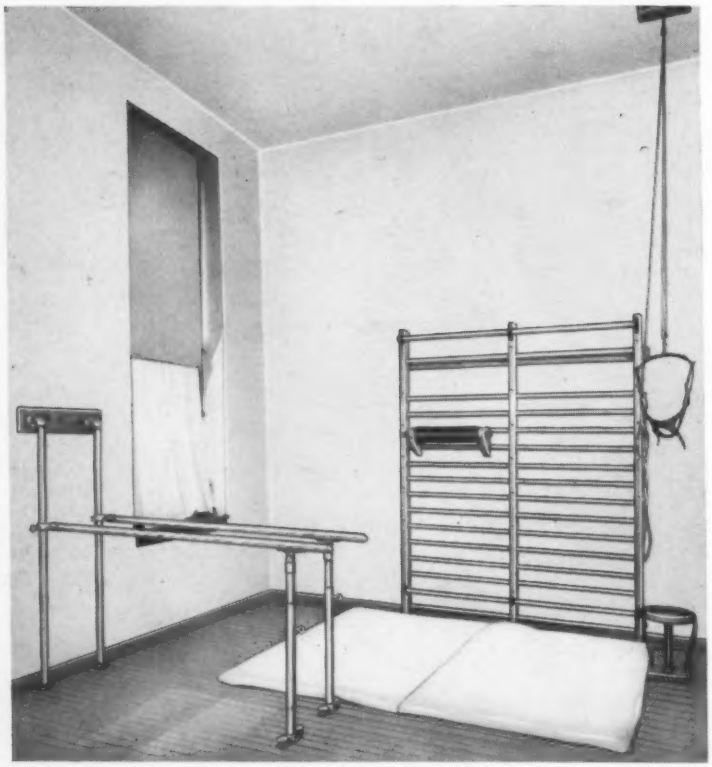
VOLUME FIVE NUMBER ONE

the journal

of the association for physical and mental rehabilitation

SEPTEMBER-OCTOBER 1951

Headquarters for Corrective Apparatus



A view of one of the many well-equipped rooms in the physical therapy department at Michael Reese Hospital, Chicago. Porter is able to supply stall bars, gym mats, chest weights and a wide variety of highly specialized corrective devices described in a catalog which is yours for the asking.

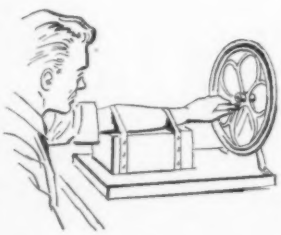
Porter Corrective Therapy Apparatus is carefully manufactured from designs based on the recommendations and experiences of authorities in the field. Many of the devices are standard equipment in Physical Medicine Rehabilitation and Corrective Gymnastic work.

A catalog containing these standard items will be mailed on request. For therapists requiring special devices, Porter's engineering department is available for working out new designs to meet new requirements.

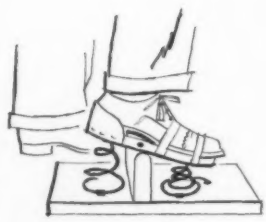
Backed by nearly a century of quality manufacturing, The J. E. Porter Corporation is the world's largest makers of gymnasium, playground and swimming pool equipment. The same reputation that has made Porter a famous name among schools, universities and recreation leaders is your assurance in the choice of Porter as a source for dependable Corrective Therapy Apparatus.

Send for your free copy of the Porter catalog of Physio-Therapy Apparatus, sent without obligation on request.

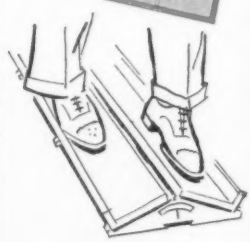
HAND, WRIST AND FOREARM TABLE to provide a full range of muscle training exercises for the metacarpophalangeal and interphalangeal joints, the wrist and the muscles of the forearm.



WRIST CIRCUMDUCTOR is valuable in "loosening up" a stiff wrist. Wrist Rolls, Shoulder Wheels, Shoulder Ladders and other devices for rehabilitating of stiff joints are in the Porter line.



ANKLE EXERCISER is effective for "loosening up" the ankle joint and for strengthening the muscles of the leg below the knee for the flexion and extension of the foot.



FOOT INVERSION TREAD is the most effective device developed for the correction of flat feet. A ratchet mechanism permits surface adjustment for various degrees of angulation.

THE J. E. PORTER CORPORATION • FACTORY AT OTTAWA, ILLINOIS

CHICAGO OFFICE: 664 N. Michigan Avenue, Chicago 11, Phone: SUperior 7-7262

NEW YORK OFFICE: 11 West 42nd Street, New York 18, Phone: LOngacre 3-1342

SEPTEMBER-OCTOBER 1951

Volume 5 Number 1

Published Bi-Monthly
by the Association for
Physical and Mental Rehabilitation

in this issue

EDITORIAL BOARD

Arthur Abramson, M.D.....Bronx, N. Y.
Chief, P.M.R. Service, Bronx V.A. Hospital
Frederick J. Balsam, M. D.....Memphis, Tenn.
Asst. Chief, P.M.R. Service, Kennedy V.A. Hosp.
John Eisele Davis, Sc.D.....Washington, D. C.
Chief, Corrective Therapy, P.M.R. Service
Edward D. Greenwood, M.D.....Topeka, Kan.
Research Director, The Southard School
Peter V. Karpovich, M.D.....Springfield, Mass.
Prof. of Physiology, Springfield College
Henry H. Kessler, M.D.....Newark, N.J.
Director Kessler Institute
Cecil W. Morgan, Ph.D.....Ft. Lewis, Wash.
Lt. Col. U.S.A.
C. O. 371st Convalescent Center

EDITORIAL STAFF

EDITOR
Everett M. Sanders
1137 Getwell, Memphis, Tenn.

ASSOCIATE EDITORS
Paul B. Bell, Lester W. Daniels, Stanley H. Wertz

CONTRIBUTING EDITORS
To Be Selected

DEPARTMENT EDITORS
Art—Charles W. McHugh
Book Reviews—Philip J. Rasche, Arthur Tauber

CHAPTER ACTIVITIES
To Be Appointed

PRODUCTION EDITORS
R. Frank Smotherman Raymond J. Urbaniak

CIRCULATION MANAGER
L. M. Frazier, Jr.
736 So. Graham, Memphis, Tenn.

ASST. CIRCULATION MANAGER
James Stier

ADVERTISING MANAGER
Dave Ser
43-01 46th St., Long Island City, N. Y.

SUBSCRIPTION RATES

Membership: Active, $6.00; Associate, $4.00;
Libraries and Organizations, $5.00;
Single Copies, $1.00

Printed by C. H. Murdock Printing Co.
347 Madison Avenue
Memphis 3, Tennessee

ARTICLES

Page

Highlights of Fifth Annual Convention of Association—John Eisele Davis, Sc.D. 3

Fascial Stretching—Harvey E. Billig, Jr., M.D., F.I.C.S. 4

Relaxation and Kinesthesis—Eleanor Metheny, Ph.D. 9

Amyotrophic Lateral Sclerosis—Harold J. Brenner, C.T., and Philip J. Rasche, C.T. 13

Current Curricula Related to Professional Education for Corrective Therapy—Karl K. Klein 16

Report on Swimming Therapy in a "VA" Hospital Robert Kramer 19

The National Multiple Sclerosis Society—J. J. Karples, M.D. 21

An Item of Special Importance 22

FROM OTHER JOURNALS

Muscle Development in Athletic Training—Evelyn Loewendahl 23

EDITORIALS

John Eisle Davis Award—Sustaining Memberships—The President Reports 25

CHAPTER ACTIVITIES

CHAPTER ACTIVITIES 26

BOOK REVIEWS 27

A CLASSIFIED DIRECTORY 29

NEWS AND COMMENTS 31

It has ever been my experience that folks who have no vices, have very few virtues.—Abraham Lincoln.

IN APPRECIATION

FOR THE WONDERFUL WORK DONE

IN THE FIELD OF

PHYSICAL MEDICINE REHABILITATION

At the Bronx Veterans Administration Hospital

M. PALTROWITZ

A Spanish-American War Veteran

WE HAVE WHAT YOU NEED

. . . or we'll build it to order

HOSPITAL BEDS — We are Headquarters for all types of Fracture Beds, Post Anesthesia, Children's cribs, Bedside Tables, Overbed tables, etc.

SERVING THE MEDICAL PROFESSION

KEEFE

KEEFE

SINCE 1933

WHEEL CHAIRS — World's Largest Selection; Hospital style, One-arm drive, Convalescent, Electric drive, Outdoor style and 101 others.

Inhalation Therapy • Ambulance and Ambulette Service

Everything for the Disabled and Convalescent

KEEFE & KEEFE, Inc. • 1114 First Avenue, New York 21 • TEmpleton 8-2200

HIGHLIGHTS OF THE FIFTH ANNUAL SCIENTIFIC AND CLINICAL SESSION OF THE ASSOCIATION LOS ANGELES, CALIFORNIA, JULY 3-7, 1951

JOHN EISELE DAVIS, Sc. D., Chief, Corrective Therapy,
Physical Medicine and Rehabilitation, Central Office,
Veterans Administration, Washington, D. C.

Authorities in the field of physical and mental rehabilitation presented a comprehensive survey of modern developments in a series of papers and discussions extending over a three-day period. Physiatrists, psychiatrists, neurologists, orthopedists, and surgeons combined with psychologists, social service workers, nurses, therapists, prosthetic and sensory aid specialists and physical educators to carry out a diversified program in which the clinical adaptation of medical modalities and concepts of modern rehabilitation were discussed and demonstrated.

New concepts of the clinical application of exercise and activities, based on a mounting array of case material, were brought before the conference. Dr. Herman Kabat discussed his patterned movement concepts of neuromuscular facilitation as developed at the Kabat-Kaiser Institute, of which he is the medical director. The stretch reflex was presented with the aid of slides by Dr. Horace Magoun, Professor and Chairman of the Anatomy Department, School of Medicine, U. S. C., Los Angeles, California, Fascia stretching was given by Dr. Harvey E. Billig, Jr., F.I.C.S., Medical Director, Billig Clinic for Rehabilitation, Professor of Physical Rehabilitation, Pepperdine College, Los Angeles, California. A visual aid picture was exhibited showing his technique.

An interesting concept of relaxation from the physical educator's viewpoint was presented by Dr. Eleanor Metheny, Professor of Education and Physical Education, U. S. C., Los Angeles, California. The favorable effect of Cortisone in Myotonia Atrophica was given a thorough scientific treatment by Dr. Ralph W. Barris, Chief, Neurology Service, V. A. Hospital, Los Angeles, California. Dr. Harvey Strassman collaborated with him in this presentation. Some effects of heat and cold on peripheral circulation comprised the subject of a carefully developed paper by Dr. Theo. B. Massell, Vascular Surgeon, Los Angeles, California.

Symposia were held on multiple sclerosis and poliomyelitis, and a series of related papers on upper and lower extremity amputees was presented. Dr. John H. Aldes, Director, Rehabilitation and Physical Medicine, Cedars of Lebanon Hospital, Los Angeles, California, gave an interesting and provocative picture of the current medical problem in the United States. Dr. J. J. Karpeles, President of the National Multiple Sclerosis Society, described the growth and present role of this organization. The neurological aspects were treated by Dr. Lindstrom. The psychological implications were discussed by Dr. Phillip Solomon, Neurological Department, Cedars of Lebanon Hospital, Los Angeles, California. The areas, methods, and principles of rehabilitation of these patients were treated by Dr. O. Leonard Huddleston, Medical Director, Kabat-Kaiser Institute, Santa Monica, California. Dr. Aldes, in introducing the series of related papers on the upper and lower extremity amputees, stressed the current concepts of exercise and activity in overall rehabilitation.

Problems of prostheses were discussed with the aid of slides. Dr. Thomas F. Barrett gave a most informative, as well as inspiring, picture of the potentialities of medical rehabilitation in a team setting. Provocative psychological findings in the rehabilitation of the amputee were given by Dr. Morse P. Manson, Chief, Vocational Rehabilitation and Education, VAH, Long Beech, California. He stressed the effect of pre-operative personality upon post-operative adjustment. The total rehabilitation of the hemiplegic patient was the subject of a critical evaluation by Dr. Leonard J. Yamshon, Chief, P.M.R., Mount Sinai Hospital, Los Angeles, California.

The panel of poliomyelitis was introduced by Dr. E. W. Fowlks, Chief, P.M.R., V.A.H., Portland, Oregon, in a discussion of the guidance of patients through the acute stages and their orientation for rehabilitation. Dr. J. Sloan Berryman, VAH, Long Beach, California, who survived an attack of poliomyelitis of the bulbar type, discussed the psychological and physical adjustments to treatment. Nursing care was explained by Miss Vivian Anderson, and Social Service in poliomyelitis was discussed by Mrs. Doris Bernhagen, Director, Student Training, Neuromedical Social Service Work, Los Angeles Department of Charity, Los Angeles, California.

Psychiatric aspects of treatment in relationship to rehabilitation were developed by Dr. Samuel Wick, Chief, Intensive Treatment Service, NP Hospital, West Los Angeles, in a discussion of the acute intensive treatment program. An illuminating concept of the motor aspects of the anxiety state was given by Dr. Solon D. Samuels, Consultant Psychiatrist, Domiciliary Unit, VAC, Los Angeles, California. Dr. John

Eisele Davis, Chief, Corrective Therapy, detailed the present status of corrective therapy as the adolescent stage of present growth. Dr. Davis presented Mr. Paul Roland to the conference, in speaking of the evolution of the treatment of the catatonic patient. This was followed by discussion of the various concepts of treatment in which Mr. Roland discussed and demonstrated his eclectic method, and Dr. James H. Rankin, Chief, Professional Service, VA Neuropsychiatric Hospital, Los Angeles, California, gave the psychodynamic aspects of the kinetic approach to catatonic patients. The subject of therapeutic conversation was developed by Dr. David Grossman, Co-Director, Los Angeles Psychological Service Center, Los Angeles, California.

The national trends in rehabilitation comprised the subject of a most interesting paper by Robert N. McCurdy, Chairman, National Rehabilitation Committee of The American Legion.

Dr. Stafford L. Warren, Dean of the Medical School, University of California, in his inimitable manner, discussed the great areas and challenges in medical rehabilitation today and the significant role of the new medical school he is organizing.

It was particularly gratifying to see the new emphasis on active exercise and common sense as adjunctive therapies. This cross-section of authorities representing the various disciplines that are dependent on rehabilitation have recognized the value of active exercise as an essential therapy in the recovery of health.

FASCIAL STRETCHING*

HARVEY E. BILLIG, JR., M.D., F.I.C.S.
Medical Director, Billig Clinic, Los Angeles, Calif.
Professor of Physical Rehabilitation, Pepperdine College

Physical fitness is a broad term that has been used to describe the sum total capacity of the body to perform physical function. When function is impaired we must break our concept of physical fitness down into its various components in order to ascertain which ones are at fault.

Mobility, for which the muscles, bones, joints, nerves and blood vessels are so admirably designed, is of very limited extent if the great architecture of the fibrous connective tissue framework of the body binds the body together too tightly.

That fibrous connective tissue contractures in rheumotoid arthritis and poliomyelitis are tragic death sentences to mobility, if allowed to persist, has long been recognized. What has failed of emphatic recognition, however, has been that fibrous tissue in general, just as is true of all protoplasm, has at all times the basic biological properties of elasticity and contractibility. Hence, if we expand our concept of the functions of fibrous tissue beyond that of obvious contractures of rheumatoid arthritis and poliomyelitis we can visualize its tremendous importance.

Immediately comes to mind a long list of factors that may "stiffen us" by shortening (contracture) of the fibrous tissue. The restriction of extent of motion following contracture of the fibrous tissue fascial ligament, during immobilization in a cast, is very similar in type to that after a summer of "loafing." Athletic coaches have long recognized the necessity of "loosening up" exercises at the start of each training season. High hurdlers particularly need to loosen their ligaments so as to be mobilized sufficiently to "do the splits" over the hurdles in order to clear them as close as possible to get back down to the ground for further traction. In just this manner so must the professional dancer be mobilized so that she can do the splits, high kicks and other motions required for her vocation. It is not infrequent to observe a once athletically mobile man gradually stiffen in a post collegiate sedentary occupation till he no longer can stoop over to touch within 18 inches of the floor, or to see a secretary or telephone operator gradually stiffen into the sedentary position of her occupation so that when she attempts to rise from her position the posterior ligaments of the neck and the anterior ligaments past the pelvis between the low back and the legs will no longer allow her to fully do so and she waddles with a forward thrust of head and neck, fixed forward tilted pelvis, and sway back. Just so do the fascial ligamentous structures contract and shorten to make a fixed postural

* Presented at Fifth Annual Scientific and Clinical Session of the Association for Physical and Mental Rehabilitation, July 3-7, 1951.

defect out of a chronic slumped posture of adolescence.

A frequent response to the strain of an injury is for the fascial ligamentous bands to contract as seen in the industrial back ache following lifting. Many a report of a workman will include the statement, "I sprained my back lifting yesterday afternoon but it wore off after awhile, however, this morning when I tried to get up it was so stiff and sore and the pain went down my leg so bad that I had to roll out of of bed and now I'm so stiff I can't bend." During the hours of inactivity in bed the insulted, partially torn fascial ligamentous bands had reacted by contracting and hence producing stiffness together with constriction irritation stimulus to the sciatic nerve at the point where its fibers pass thru the foramina in the fascia hence resulting in nerve pain felt as radiating into the peripheral distribution.

Fibrous tissue proliferation and contracture can result from a great many irritative stimuli. The tendency is particularly marked with certain low steroid endocrine levels, so that when such is present, the proper steroid together with colchicine should also be used in therapy.

The fascial ligamentous contracture may occur as generalized or in a specific region on either or both sides in their ramifications between the occiput (anteriorly or posteriorly past the cervical region, past the dorsal region, past the lumbar region, anteriorly or posteriorly (to include iliopsoas) past the pelvic region) and their eventual caudal attachment with the iliotibial band to the lateral condyle of the tibia past the knee.

The caudal ramifications are inserted past the knee (iliotibial band) hence they are kept taunt when the knee is extended and loosend (released) when the knee is flexed. In the straight leg raising test, the extent of motion should be free and painless to a point where the hip is at 90 degrees and in neutral as to adduction-abduction. Should the straight leg raising be restricted, the "feel" of the restriction determines whether the restriction is ligamentous, muscular or bony. If one carries the leg into abduction from the point of restriction, it can be noted that further straight leg raising is possible, thus eliminating the hamstrings as a factor in the restriction (note vector of pull of hamstrings whose proximal attachments to the pelvis are medial to the center of hip joint motion). If one attempts to carry the leg into adduction from the point of restriction, even greater resistance (fascial-ligamentous) will be encountered and a sciatica will be reproduced (or exacerbated) with the first complaint being behind the knee, and then, as further force is exerted against the restriction, the complaint will spread up and down the leg along the course of the sciatic nerve into its peripheral distribution reproducing motor and sensory nerve stimulus signs and symptoms.

The signs and symptoms reproduced may be those of spastic hammer toes, "sciatica," Mortons toe, metatarsalgia, numb great toe, pain into the posterior tibial nerve distribution, pain into the peroneal nerve distribution, plantar heel pain ("stone" bruise type) depending upon which elements making up the sciatic nerve are being compressed and hence irritated in the foramina where they pass thru the fascial ligaments. Some of these signs and symptoms are frequently found accompanying a low back ache and may be exacerbated by testing in the above manner.

Complaints of pain "thru the knee" and most marked over the medial aspect, frequently mistaken for a medial meniscus injury, can be traced to tenderness over the distribution course of the infrapatellaris branch of the femoral nerve and may be exacerbated by straight leg raising in neutral as to abduction-adduction.

Complaints of pain in the low back sometimes radiating into the peripheral distribution of the 12th dorsal and 1st lumbar spinal nerves in the lower abdomen may be exacerbated by hyperextension of the hip in adduction with the patient in the prone position. The complaint is a frequent one in women and has become known as "menstrual cramps" coming on just prior to menses at a time when the glandular endocrine level results in lowering of the sensory threshold to stimulus of these nerves where they are compressed in their foramina by the contracted fascial ligamentous bands. Standing these patients with back to a wall and heels, buttocks, shoulders and head touching the wall will demonstrate that the lumbar spine cannot be brought to touch the wall by posteriorly tilting the pelvis unless the knees and hips are slightly flexed thus showing the fascial ligamentous contracture as being of those ramifications passing from the low back anteriorly to the pelvis then to the leg having traversed a course anterior to the center of hip joint motion.

By the same mechanism arise the complaints of intercostal neuralgia with or without pain between the shoulder blades (scapulae), cervical neck pains radiating out to the shoulder and into the arms as various brachial neuritis types or over the head as a "headache" in the distribution of the greater and lesser occipital nerves.

Relief from these complaints may be obtained by releasing the nerves from their constriction irritation in the foramina by means of loosening lengthening of the contracted fascial ligamentous ramifications by means of progressive accumulative stretching exercises.

The following mobilizing stretching exercises are

advised: Mobilization 1 (passive). Forced rotation in the upper cervical spine region.

The patient is seated in a relaxed position with the back of the hips touching the back of the seat. The legs are anchored at the base of the chair. The therapist, with her right arm across the patient's chest, exerts equal pressure on both shoulders. The left wrist of the therapist is placed firmly under the chin of the patient as she makes a rotary gliding movement in the left direction opposite to the arm that anchors the shoulders. Therefore, if forced cervical rotation to the right is prescribed, the left arm is placed across the shouders, and the right wrist under the chin rotates the head to the right. The act of mobilization does not cease at the point of ligamentous restriction but goes beyond that point. The therapist will discover that to ensure a stretch accomplishing actual fascial loosening, her whole trunk will have to twist with the arm under the chin, to the extent that her whole body will rotate from the balls of her feet on up.

Mobilization 1 (*active*). *Forced rotation in the upper cervical spine region*

The patient is seated in a chair. One hand firmly grasps the seat near the posterior chair leg. The head and neck are forcibly roated (twisted) toward the direction opposite the anchored hand. When the full extent of possible rotation has been achieved, the patient places the palm of the free hand on the chin to force rotation a bit farther. This stretching is repeated three times to each side, three times daily. Complaint of basal headaches, occipital headaches, pain and sensitivity up over the scalp, frontal and temporal headaches, deep aching in the eye, and transient blurring of vision may thus be relieved. The symptom of blurring of vision has to do with dilation and contraction of the pupils resulting from autonomic nerve irritation stimulae involving the cervical ganglia.

Mobilization 2 (*passive*). *Forced rotation tilt in the middle and lower cervical spine region.*

One shoulder of the patient is anchored by the forearm of the therapist, whose opposite hand and wrist are placed on the head of the patient. Movement of the head is then forced in a postero-lateral direction. The stretch is slow, smooth, and steady. The chin of the patient is held throughout the motion in a retracted position. At the moment when the greatest force is exerted, the weight of the therapist is in the upper trunk and is applied to the head and neck region of the patient.

Mobilization 2 (*active*). *Forced rotation tilt in the Middle and lower cervical spine region.*

The patient is again seated in a chair, one hand firmly grasping the chair seat near the posterior chair leg as an anchor. The head and neck are rotated forty-five degrees in the direction opposite the anchored hand. Then, the chin is retracted the maximum distance possible and is held retracted (pulled in) throughout the following stretch. With the aid of the free hand—which is placed across the head, just back of the frontal hairline at the ear—the head and neck are titled forcibly in the direction away from the hand holding the chair. This stretching is repeated three times to each side, three times daily. Complaints of postcervical pain and aching, stiff neck, pain and aching in the trapezius region, and tingling numbness in the arms and hands may thus be relieved. It is frequently advisable to use Mobilization 1 in conjunction with this stretching.

Mobilization 3 (*passive*). *Forced rotation in the dorsal spine region.*

The patient is seated in a straight-backed chair, with the hips touching the rear section of the chair. Throughout the movment, the hips are to remain in this position. The therapist grasps both shoulders of the patient and rotates them through the limit of motion permitted by the ligaments, carrying the arc of movement beyond the point of restriction in order to insure a stretch. At first, the weight of the therapist's trunk bears equally on both shoulders of the patient. However, as the rotation continues, the therapist assumes a forward-leaning position, and the weight of her entire trunk bears down in the direction of the rotation.

Mobilization 3 (*active*). *Forced rotation in the dorsal spine region.*

Seated in a straight-backed chair, the patient hooks the feet around the front chair legs. The shoulders and upper dorsal spine are rotated (twisted) forcibly to one side. This may be aided by grasping the back of the chair with the hands and pulling. This stretch is repeated three times to each side, three times daily. Complaints of pain between the shoulder blades, intercostal neuralgia, neuritis, or pleurisy may thus be relieved in many patients with negative organic heart and lung pathology.

Mobilization 4 (*passive*). *Stretch in the dorsolumbar spine region and in the ligamentous attachments passing anterior to the hip joint.*

The patient is in a face-down (prone) position, with a strap placed just distally to the sacrum. The strap is firm enough to hold the pelvis rigidly in place so that it cannot move in any direction. The three-ply cotton beling, one and one-half inches wide, with a slip buckle, has been chosen particularly with this position in mind. The belt is fastened under the treatment table. The therapist lifts the whole leg with hands clasped under the patient's knee. The leg is then carried into full extension to the point of limitation and across the midline into adduction. Throughout the entire motion, the arms of the

therapist are fully extended. To maintain weight balance in the course of carrying the leg into the adduction motion, the therapist places one knee on the treatment table while moving the weight of her trunk in the direction of the adduction.

Mobilization 4 (*active*). *Forced lateral tilt in the dorsolumbar and lumbar spine and in the lumboscacral area, combined with extension of the pelvis at the hips.*

The patient stands with heels and toes together, about eighteen inches from and sidewise to a wall. One elbow is placed against the wall at shoulder level, with the forearm and hand resting on the wall. The heel of the opposite hand is placed in the hollow on the posterior aspect of the greater trochanter of the hip. The shouders are kept in line with the elbow, perpendicular to the wall, and are not allowed to shift forward. The knees are kept completely extended and must not flex. The abdominal and gluteal muscles are strongly contracted, while the hips are shifted slightly forward and inward toward the wall. This movement is aided by pressure on the greater trochanter of the femur from the heel of the hand. The objective is to force the sideward and forward shift of the hips toward the wall far enough to place a strain on the contracted ligamentous bands and to gain a progressive stretch. Of course, this accentuates the symptoms momentarily with each stretch. This stretch is repeated three times to each side, three times daily. Complaints of lumbar and lumbosacral backache, aches in the tenth, eleventh, twelfth dorsal and first lumbar peripheral nerves, distribution of pain into the abdominal wall, inguinal region, and perineum (ilioinguinal and inliohypogastric nerves) may thus be relieved. Dysmenorrhea is included in this category.

Physical examination of an individual complaining of dysmenorrhea usually reveals a postural defect that restricts the extent of the posterior tilt of the pelvis. There is a shortening of the fascial ligamentous bands from the region of the dorsolumbar spine to the anterior pelvis and, thence, anteriorly past the hips to the lateral femorral fascia and iliotibial band, and to its attachment, past the knee, at the lateral condyle of the tibia.

If the individual with dysmenorrhea is asked to stand with her back to a wall, knees stright, heels, buttocks, shoulders, and head touching the wall, the dorsolumbar spine cannot be brought to touch the wall, and the individual must needs maintain this position with a swayback. If, however, with heels, buttocks, shoulders, and head still touching the wall, the knees and hips are flexed, the dorsolumbar spine can easily be brought to touch the wall. The explanation is that flexing the hips and knees releases the contracted fascial pull and allows the pelvis to tilt back and, hence, correct the sway-back. When the hips and knees are extended again, the dorsolumbar spine is pulled away from the wall, reproducing the sway-back.

Persons with dysmenorrhea, when asked to locate their pain, will usually outline the area of the distribution of the ilioinguinal and iliohypogastric sensory nerves in the abdominal wall. In severe cases even the finer sensory branches will be included. The ilioguinal and iliohypogastric nerves, originate from the twelfth dorsal and first lumbar spinal nerves, which pass through the above mentioned contracted fascial ramificatious and are irritated by the constriction. This results in pain reflected in the region of the distribution of these nerves, similar in type to the radiation of pain into the distribution area of the ulnar nerve in the hand when it is subjected to a compression irritation at the elbow, such as when bumping the "crazy bone."

As each mensis approaches, the endocrine balance changes, and the shortened fascial bands contract further and produce irritation stimuli to these nerves. The symptoms may be reproduced at any time in the menstrual cycle if a manipulative tension i splaced on the contracted fascia by means of forced hyperextension in adduction of the leg at the hip, with the individual in the prone position. Many individuals receive partial and transient relief by releasing the pull of the contracted fascia through recumbency with hips and knees flexed.

Contractural shortening of these fascial bands may result from a variety of causes, such as chronic bad posture habit, occupational posture habit, pelvic irritations (the pelvis is held tilted forward, with relaxed abdominal muscles in an attempt to prevent the abdominal contents and wall from pressing on sensitive pelvic structures), fascial strains, automatic nervous system stimuli from pelvic organs, and endocrine dyscrasias. Sufficient loosening of the fascial contracture to relieve the compression irritation of the involved nerves will prevent recurrence of the symptoms.

Mobilization 4a (*passive*). *Stretching of the iliopsoas muscle and the ligaments passing the pelvis exterior to the hip joint between the low back and legs.*

The patient is in a face-down (prone) position, with the strap placed directly over the coccyx and just distal to the sacrum. The need for firmness in the strapping cannot be overphasized. It must be tight enough to hold the pelvis fixed in place so that absolutely no movement is possible in any direction. As explained before, the strap used is one and one-half inches wide, made of three-ply cotton belting with a slip buckle that does not slide open readily.

The therapist lifts the whole leg with hands clasped

under the knee of the patient. The leg is carried into full extension to the point of limitation and then carried out into abduction. Throughout the entire motion the therapist's arms are fully extended. The whole weight of her body is used in this mobilization to insure movement beyond the arc of ligamentous restriction. The full weight of the therapist's trunk shifts from one foot to the other, as the patient's leg is carried into the abduction arc.

Mobilization 4a (active). Same as Mobilization 4 (active).

Mobilization 5 (passive). Same as Mobilization 6 (passive).

Mobilization 5 (active). Forced forward flexion of the pelvis at the hips, with the legs in neutral.

Standing with heels and toes together, knees held completely extended, and arms hanging loosely toward the toes, the patient executes a sharp forward bow from the hips, six times in succession. Attempts should be made to advance the downward extent of the motion with each succeeding bow. This series of six stretches is repeated three times daily. Complaints of back pain in the superior sacroiliac joint region, radiating through the hip to the anterior high thigh or inguinal region, and pain and sensitivity over the medial aspect of the knee and patella, radiating through the knee, as well as edematous effusion in the knee joint may thus be relieved. These complaints or aches in the distribution area of a peripheral nerve are produced by irritation of the femoral nerve at the pelvic level, i.e., femoral nerve fibers distributing to the ramus infrapatellaris of the saphenus nerve.

Mobilization 6 (passive). Forced forward flexion of the pelvis at the hips.

To loosen the ligamentous structures which pass posterior to the pelvis and continue posterior to the hip joint and past the knee, down the back of the calf to the heel, a mobilization composed of the following stretching is applied.

The patient lies on the back, with legs fully extended. The position of the strap across the pelvis is distal to the anterior superior spine. A second strap is placed over one knee, just above the patella. The therapist lifts the whole leg, with hands clasped firmly over the patient's knee and, keeping the knees straight, carries the leg into full flexion and then into adduction. The patient's heel is hooked firmly over the shoulder of the theapist and remains in that position throughout the movement of flexion and adduction. In order to keep balance, apply strength, and carry the weight on the shoulders, the therapist places one knee on the treatment table while the other leg on the floor supports the weight of her trunk.

Mobilization 6 (active). Forced forward flexion of the pelvis at the hips, with the leg rotated in adduction.

The patient is instructed to stand on the affected leg, with knee kept fully extended, about twenty inches from the table and with the back to the table. The hand on the affected side rests on the table for balance. The opposite leg is then, with knee flexed, twined from the front tightly around the affected leg. The foot is placed in tiptoe position on the floor, posterior and lateral to the heel of the affected side. The arm is held across the chest. From this position, the patient bows forward from the hips, dropping the heel from tiptoe position to the floor. The action of letting the heel drop helps to keep the knee of the affected side in hyperextension by pressure from the crossed-over legs. The chest is thrown downward with a bow from the waist. This stretch is repeated in sequence six times to each side, three times a day. Complaints of back pain, chiefly in the inferior sacroiliac joint region, and pain radiating into the peripheral distribution of one or more branches of the sciatic nerve, such as Morton's toe, metatarsalgia, heel pain, cramping (motor nerve) in the calf muscles, spastic hammer toes (motor nerve), or full sciatica may thus be relieved. These complaints in the area of distribution of a peripheral nerve are produced by irritation at the pelvic level of the sciatic nerve. The nerve compression may, if prolonged, result in marked muscular atrophy or in impairment of nerve conduction, with loss of reflexes. These signs clear up following release of the fascial contracture.

In all cases the stretchings must be carried out correctly, hard and routinely until progressively in a matter of days to months, as the case may be, full mobilization has been obtained.

During the past ten years this method of attack on the problem of back ache and peripheral nerve pain has been introduced into school systems, industries, Veterans Administration hospitals, military hospitals, manufacturing concerns with gratifying results.

At a large "heavy lifting" oil tool manufacturing concern, where a technician constantly supervised the stretching so as to make sure of consistent cooperation in progressive loosening of the contracture producing the symptoms, off duty time for these complaints was reduced to zero for over three years. In this instance treatment was carried out on duty and immediately upon onset of complaints.

At an aircraft plant during World War II, fifty some additional bombers were built with the off duty time saved through correction of these complaints during the first ten months following use of these methods.

Adequate therapy necessitates adequate therapists and the installation of these methods has brought under observation many therapists with different backgrounds of training. It has become clear that in general those therapists showing the greatest amount of comprehension are those with a physical education background. This was brought vividly to attention during World War II in the navy when the "Specialist A," previously used at recreation rest centers, were assigned to the wards at the San Diego and Long Beach Naval Hospitals and carried out the "mobilization" program so understandingly and so magnificiently with such astounding success.

It seems clear that setting up corrective therapist training utilizing the Physical Education Departments of Universities and Colleges where a proper four year training background can be given would be a great step forward in solving this country's therapist shortage.

Several schools have already taken such steps and our own local George Pepperdine College is now into its third year of full fledged program and will shortly begin to graduate its first adequately trained, four year college trained "Corrective Therapists" under the sponsorship of the physical education department.

———

REFERENCES

Billig, Harvey E., Jr., Loewendahl, Evelyn, Mobilization of the Human Body. Stanford University Press, 1949.

RELAXATION AND KINESTHESIS*

ELEANOR METHENY, Ph.D.
University of Southern California
Los Angeles, California

The literature relating to the general topic of relaxation is extensive. In most of it the good intent of the writer is obvious, but research evidence is sparse. Philosophers, psychiatrists, psychologists, mental hygienists, physicians, preachers of various persuasions, practitioners of diverse descriptions, and self-improvement popularizers of many kinds have all contributed to the bulk, the complexity, and the confusion which characterize the material. It therefore requires no particular temerity for a physical educator to present one more paper on the subject. However, the prevailing confusion does make it necessary to begin any discussion of the subject of relaxation with a definition of terms.

Tension, in this connotation, is perhaps best defined as an increase in the tonus of the muscle which is unrelated to the activity requirements of the muscle. It is quite generally agreed that this increase in tonus arises as a result of conflict or frustration which may or may not be consciously perceived by the individual. One stimulus pattern activates the agonists; a conflicting or inhibitory stimulus pattern activates the antagonists. No overt action results, but the tonus of both sets of muscles is increased. Obviously this muscular stalemate can not occur without involving other systems and functions of the body. These somatic and psychosomatic effects are probably of much greater import than the muscular involvement, as such, but the less complex muscular phenomenon provides a convenient handle for getting a grasp on the problem.

Relaxation is less readily defined because it is a matter of degree and differentiation related to purpose. If the purpose is complete rest, the limp ragdoll decrease of tonus in all muscles is an effective form of relaxation. If the purpose of the moment is to hit a golf ball three hundred yards, relaxation must be differently expressed. The tonus of certain muscles must be greatly increased, but tonus in muscles opposed to or unrelated to the task must be reduced to a minimum.

Functionally, relaxation may be defined as the psychosomatic condition which permits the individual to secure maximum purposeful results with minimum energy expenditure in any given set of circumstances. To achieve this end, the tonus of all muscles should be graded to the requirements of the task; all energy expenditure should be directed toward the accomplishment of the task; and no energy should be dissipated in opposing, diverse, or ramdom action.

In this definition relaxation becomes synonymous with efficiency. It seems probable that neither are ever perfectly achieved by imperfect humans living in an imperfect world, but both are most closely approximated when the individual functions in a satisfying situation which absorbs his entire attention, provided he thoroughly understands the requirements of the situation as they relate to himself and knows (or believes) that he is able to succeed in meeting

———

* This paper presented at the Fifth Scientific and Clinical Session of the Association for Physical and Mental Rehabilitation, Los Angeles, California, July, 1951.

those requirements. To the degree that he is satisfied, interested, competent, and confident, he will be relaxed; but if he is uncomfortable, disinterested, frustrated by his own inadequacy, or afraid of failing, he will be tense.

If we accept the premise that tension is universal and that relaxation is a relative matter of degree of tension dependent upon more or less identifiable factors, the problem of teaching hypertense individuals how to control their tensions emerges in somewhat more clear-cut definition.

It can be approached as a psychological problem by teaching the individual to identify and control his fears, by teaching him to concentrate his interest and attention on the task at hand, and by increasing both his competence and his confidence in his ability to succeed. This long term approach can be facilitated, however, by helping him to identify kinesthetically the psychosomatic condition he is trying to achieve, and by teaching him the neuromuscular skill of controlling the tonus of his muscles at will. It is with this more limited aspect of the total problem of relaxation that this paper is concerned.

It is recognized that many people do not really want to learn to relax. Having lived so long in a state of hyper-tension, they love their tension as an old friend, and they cling to it tenaciously as a symbol of their importance as harried, worried, overworked, put-upon individuals who carry the weight of the world on their shoulders. Divested of their tension, they feel naked and inconsequential. This strong tendency to cling to the familiar, even though it be a hindrance to progress, is an obstacle which must be overcome in any learning situation. But for the purpose of the present discussion let us assume—somewhat optimistically—that it has been overcome. Momentarily, at least, the patient is cooperative, interested, and willing to attempt to learn the neuromuscular skill of relaxation.

When this point has been reached, one popular approach consists of saying to the patient, "Relax. Let go." Another attempts to identify the feeling of relaxation by first asking the patient to increase his muscular tension to a maximum, then instructing him to release the tension and continue releasing until the muscles are limp. The first approach seems to me to be tantamount to handing a pupil a bag of assorted golf clubs, indicating the general direction of the course, and then saying to him, "Play golf." By trial and error he may eventually get around the course, but it will be a time-consuming and frustrating experience. The second method seems to me to be equivalent to having the golfer hit his worst slice and then saying to him: "That's the wrong way. Stop doing it, and the more you stop doing it, the better your game will be." Some people eventually achieve a game that resembles golf with that kind of negative instruction, but the concentration on "don't" interferes with the development of positive, successful practice.

I doubt that relaxation can be taught by saying, "Don't tense your muscles." Living, inervated muscle can never "do nothing." It must, if it is alive, be doing something. The questions are: "What?" and "How much?" The ability to relax, considered as the ability to voluntarily control the tension of muscles, is no different from the ability to perform any neuromuscular skill in which muscle tension must be graded to the requirements of the immediate task.

A neuromuscular skill can be analyzed and described and understood intellectually, but the performance of it is a kinesthetic process. It would be meaningless to say to the golf pupil: "Increase the tension in muscles A, B and C by so many degrees, in D and E to some lesser degree, and decrease the tonus of muscles X and Y to a minimum." This may be exactly what he will do when he executes a perfect swing, but the total movement will be an integrated kinesthetic process rather than a series of muscle actions intellectually controlled.

The competent teacher of a neuromuscular skill recognizes the paradox that the pupil can learn to swing successfully only by swinging successfully. Kinesthetically, he must" get the feel of it" before he can make progress. Having experienced the kinesthetic perception of what he is trying to do, he can then practice by attempting to reproduce the "feeling" or the kinesthetic sensation he experienced when the swing was successful. He experiences his first success through a trial and error process; the teacher only facilitates the process by demonstration, by verbal cues, by preventing the occurrence of gross errors, by focussing the pupil's attention on the essential parts of the process, and by setting up a situation in which success is likely to occur. Only when the pupil has experienced success, even though it be of a limited or partial nature, can he practice constructively by himself. He must first experience the entire kinesthetic relationship of acting, relaxing, and fixating muscles integrated into one smooth swinging motion. He can then, by patient practice, begin to "groove" the feeling of the swing until he can reproduce it at will. How long this will take depends both upon the acuteness of his *kinesthetic* perception and his ability to reproduce a *kinesthetic* sensation.

This *kinesthetic* paradox seems to me to be the crux of the problem of learning to control muscle tension voluntarily. Before the patient can "learn to relax," he must first experience the feeling of relaxation. Only after he has perceived the kinesthesis of relaxation can he attempt to produce it. Conse-

quently, much of this writers own experimentation in the area of relaxation has been devoted to trying to discover a technique, a device, or a method which can be used in a group situation to produce the kinesthetic sensation of relaxation. The technique with which I have had the greatest success to date is a simple one: slow, controlled movement which requires intense concentration. The movement may be active, as it is with my normal groups, but it could equally well be done passively with a handicapped patient who had limited muscle control or strength.

Since a kinesthetic sensation can not be verbalized, you will have to experience it to understand it. Extend your right arm, palm down, at shoulder height. Whole counting slowly to thirty, raise your arm slowly but continuously, timing the movement so that the arm reaches the vertical position at the count of thirty. Again counting slowly to thirty, slowly but continuously lower your arm until it reaches the starting position exactly as you reach the count of thirty. Let your arm drop easily to your lap. Compare the "feeling" in your right arm with the "feeling" in your left arm which is still in its normal state. Is there any difference? Try to make your left arm feel like your right one does. Quickly make a fist with your right hand. Release it, and again try to make your arm feel as it felt when you dropped it in your lap.

Try one more sample. Sit well back in your chair. Using the same slow count of thirty, slowly but continuously turn your head to the left as far as it will go; then to another thirty count slowly bring it back to the starting position. Repeat to the right. Did it ease the tightness in your shoulders a bit?

For total body kinesthesis I use a back-lying position with the knees bent and the feet close to the buttocks. Again to the slow count, the hips are raised from the floor, then the back, vertebra by vertebra, until the body is resting on the shoulders in the bridge position. Then the process is slowly reversed, and the feet are allowed to slide down until the legs are straight.

I also use a slow turning of the legs from a position of extreme inward rotation to one of extreme outward rotation. One which is a favorite with my pupils is long face-short face. Make the face as long as possible by opening the mouth and eyes wide. Then make the face short by squeezing the mouth and eyes shut. Long, short, long, short. Then from the long position, take twenty counts to let the face slowly return to its normal length. Open eye-shut eye is done in similar fashion, but I seldom use it because it puts the more relaxed students to sleep!

After each exercise, the emphasis is on kinesthetic perception. When the students begin to develop some kinesthetic awareness of relaxation, I try to startle them with some loud, unexpected noise. I try to make them angry or have them simulate anger. They attempt to identify the kinesthesis of fright or of anger, and then they try to return to the feeling of relaxation.

Through this process they gradually develop a kinesthetic awareness of the sensation of relaxation, and they begin to develop the neuromuscular skill of producing that feeling at will. I believe the proportion and degree of success is about the equivalent of that experienced in a beginning golf class.

In this process of inducing a feeling of relaxation by slow, controlled movement, a number of factors appear to be operative. A clear-cut stimulus to positive action is present. The action is such that it requires almost complete mental concentration. The action requires easy, normal use of the fibres of both the agonists and antagonists. The action is continued long enough to be mildly fatiguing, with contraction of the muscle fibres followed by return to resting length and normal physiological recovery. The action is slow and smooth, as contrasted with either the spasticity or the restraint which characterize tension in different individuals. And, possibly there is some hypnotic suggestion in the monotony of the counting voice. It appears that the patient's conflicts are, momentarily at least, resolved in simple action which diverts his mind from his frustrations while it quiets his body and encourages the establishment of physiological homeostasis. The mild, but not uncomfortable, fatigue produces a feeling of lassitude. For a brief time he has no desire to move. Consequently, he is relaxed.

When he is able to identify the kinesthetic sensation of relaxation as contrasted with the kinesthetic sensation of tension, the pupil is then at the same stage as the golfer who has executed a satisfactory swing and knows how it feels. He is now ready to begin constructive practice. He will practice both intellectually and kinesthetically because he now both understands and feels what he is trying to do. Like the golfer, he will sometimes succeed and sometimes fail, and he may need many times to repeat the slow-movement process to re-inforce his kinesthetic perception of the relaxed state. How successful his practice will be depends both on his ability to perceive and reproduce the kinesthetic sensation and on his interest and willingness or eagerness to learn.

The golf pupil with a few repetitions of a smooth swing to his credit is not yet ready for eighteen holes of competitive golf. He restricts his practice to the driving range where distraction, complexity, conflict, and consequences of failure are at a minimum. In this conducive situation he tries to "groove" his swing, not in his mind but in his neuromuscular system. Learning to swing the brassie, midiron, and

mashie with reasonable consistency, he then finds satisfaction in practicing his new skill on a short, easy course with wide fairways and large, flat greens. Gradually he learns to adapt his skill to the slightly varied requirements of the other woods, the intermediate and the short irons. In time, even wooded rough and deep sand traps hold no terrors for him. He has mastered the kinesthesis of golf.

Similarly, the would-be relaxer must first "groove" his skill in a non-distracting situation most conducive to the relaxed state. He lies on his back in a quiet room, the demands on his muscles, his mind, and his emotions reduced to a minimum. He practices his new skill by consciously attempting to produce the kinesthetic sensation of relaxation which he has previously experienced. When he can do this at will, he is ready to take the next progressive steps.

His next practice should be in a passive, sitting situation, while attending a lecture, a movie, or possibly watching television. Recognizing that his muscles must work only to maintain his body in a semi-erect sitting position, he checks to determine how many of his muscles are in a state of unnecessary tension. He identifies any tension in his shoulders, arms, hands, legs, feet, neck, and face, and then consciously attempts to produce the kinesthesis of relaxation in these supposedly resting parts. He may need to move each part slowly to release a held position or as a kinesthetic reminder. He will need to re-check at intervals, for the habit of tension is strong, but gradually he should be able to achieve relaxed sitting a major portion of the time. He is then ready to progress to a slightly more active situation.

Trying to relax while driving a car is good practice. The physical effort of driving the modern car, even in heavy traffic, is very slight; the frustration inherent in such driving is great. Tension which can not be released in physical activity mounts. If he can philosophically accept the fact that nothing he can do will turn all the red lights green or make gentlemen of the halfwits who drive the other cars, he can utilize the situation to practice the skill of relaxation. I recommend using each red light as a reminder to identify the destructive tensions and to replace them with the kinesthetic sensation of relaxation. This is a severe test of the ability to voluntarily control muscle tension. An even more severe test, however, is to do it when someone else is driving! When this ability has been achieved, the pupil is ready for the advanced class.

The final stage of being a relaxed person involves the ability to maintain the relaxed state while walking, playing, or working. It utilizes the ability to recognize the feeling of tension in the non-working or opposing muscles of the body plus the ability to replace that feeling with the kinesthesis of relaxation. When he can do this he has "grooved" his skill to the point where he can get out of the sand-traps of life with equanimity.

He can do it. But will he? No, not always. Ben Hogan has devoted his life to golf. He has practiced reproducing the kinesthesis of the perfect swing for thousands of hours. But even Ben Hogan muffs one now and then. Don't we all?

The kinesthetic approach to relaxation is not proposed as a panacea for all the tensions of our times. Its value lies in its usefulness as a device for increasing the individual's awareness of his own destructive tensions, as a technique for securing temporary release from them, as a method of helping him rest while working, and as an aid in increasing his neuromuscular efficiency. It may not enable him to win life's P.G.A. championship, but I believe it can take a few strokes off his handicap.

TO OUR CONTRIBUTORS

All articles should be typewritten. They should be double spaced and written on but one side of the paper. Duplicate copies should be made. Send only the original. Keep your carbon copy and a copy of all tables, figures, photographs for cuts, for future use, should cuts be lost in the mails.

DEAD LINES

The last day for receipt of copy will be the 15th of Oct. Dec. Feb. April, June.

WANTED

Back numbers of all issues. The Association will pay 50c per copy.
Send copies to Editor.

REPRINTS

Your Editorial Board has authorized the following prices.

100 reprints	$10.00 per page
200 reprints	10.50 per page
300 reprints	11.00 per page

Reprints should be ordered when manuscript is submitted. Send requests for reprints to the Editor, 1137 Getwell Street, Memphis, Tenn.

A NEW APPROACH TO THE TREATMENT of AMYOTROPHIC LATERAL SCLEROSIS

HAROLD J. BRENNER, Corrective Therapist, North Hollywood, California
PHILIP J. RASCH, Corrective Therapist, Los Angeles, California

Because of its connection with the death of Lou Gehrig, with the subsequent organization of the Lou Gehrig Memorial Fund, the term amyotrophic lateral sclerosis has become familiar to every newspaper reader. Most laymen have the impression that it is a disease similar to poliomyelitis which particularly affects athletes. While it is true that both ailments are characterized by atrophy of a disseminated neurogenic type and although amyotrophic lateral sclerosis is sometimes wrongly termed "chronic poliomyelitis," it does not follow that either is positively correlated with great muscular activity. Nielsen[1] not only denies that professional athletes as a class are particularly susceptible to the ravages of the Aran-Duchenne type (the common adult form of progressive muscular atrophy), but specifically states that the Gehrig case was simply a coincidence, not an example of a rule.

Amyotrophic lateral sclerosis is a disease of the upper and lower motor neurons. It was first described clinico-anatomically by Charcot in 1865[2]. Grinker considers that progressive bulbar palsy, progressive muscular atrophy and amyotrophic lateral sclerosis are all one disease of the nervous system. It specifically attacks the large motor ganglion cells of the spinal cord and brain. No other portions of the spinal gray matter except the anterior horn cells are involved. Its etiology is unknown; no vascular changes or infections have been found to be causative. Trauma may be a precipitating factor but it is not a causal one. Heredity, racial and familial factors do not seem to be involved. Men are attacked two or three times more frequently than are women. Onset is rare before the thirtieth year and usually begins between the ages of fifty and seventy. As a rule the clinical course runs from two to eight years, although this is subject to considerable variation.

In typical cases diagnosis is not difficult. Normally the first symptom is weakness in the small hand muscles. This slowly progresses from muscle to muscle up the arms to the shoulder girdle, usually involving the biceps and deltoids. If the spinal and thoracic musculature is attacked, dangerous involvement of the respiratory muscles may result. Spastic partial paralysis of the lower limb develops. The atrophy is accompanied by small rapid twitchings of the muscle fasiculi. The muscles themselves become flabby and may disappear entirely. Patients in this advanced condition are simetimes seen in side shows as "living skeletons." The progression is slow and may be interrupted by a stationary period, but there are no accounts of remissions followed by muscular regeneration. Eventually the patient becomes bedridden and may die of some other disease, usually a respiratory or kidney infection.

Although the disease can be described satisfactorily, this much cannot be said regarding checkup treatment. Grinker states that considerable rest is required, but "treatment of progressive muscular atrophy is not successful"[3]. Christian holds that "The disease is incurable. The downward progress is slow, but certain . . . Trauma, fatigue and cold should be avoided."[4] Nielsen writes that "Treatment consists of general care and mild massage . . . "[5]. Wechsler notes that "The treatment in general is not satisfactory and is essentially palliative."[6] Brain informs us that "The cause of the disease in most cases being undiscoverable, treatment is limited to dealing with symptoms . . . . The patient should avoid fatigue and exposure to cold, but should be encouraged to continue at a light occupation as long as possible."[7]

Amyotrophic lateral sclerosis has always been considered a "living death" for the patient. The psychological impact upon the patient of this professional despair is easily imagined. Nielsen goes so far as to advise that he should not be told of the gravity of the situation because "Discouragement by loss of interest in effort and loss of appetite greatly hastens death."[8] Unfortunately it is not usually very long before the patient becomes aware of his condition and its prognosis. After he has been embarrassed a few times by dropping things, he tends to cease using his hands. As the disease develops he is forced to withdraw from participation in activities which formerly played an important part in his life. When he learns that treatment consists of little more than rest and avoidance of fatigue and cold, he first becomes fearful and then develops a defeatist attitude. Finally, he surrenders to utter hopelessness and simply awaits his time to die.

[1] Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are a result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

From the foregoing discussion two points are clear: (1) The accepted treatment of amyotrophic lateral sclerosis has consisted principally of rest. (2) This treatment has been completely unsatisfactory. Cailliet might well have had this ailment in mind when he wrote that "It has been all too common in the past to ignore possibilities of rehabilitation in a disease considered progressive . . . . patients have been allowed to become chronic inmates in rest homes, or wards of the state until a 'cure' could be found."[9]

While the condition is not too common, any Corrective Therapist working with neurological patients may expect to encounter an occasional case. With the increased life expectancy of the American people it may be anticipated that the number of such patients soon will increase if for no other reason than that a greater number of people will live to reach the susceptible age group. It is obvious that if we are to help those so afflicted we cannot do so by continuing along traditional lines.

The keynote of Corrective Therapy is activity. Motivating the patient to participate in a guided program of doing things for himself is the core of its procedures. Nevertheless, any Corrective Therapist recognizes that there are conditions in which rest is essential; particularly is this true of inflammations. While amyotrophic lateral sclerosis has been regarded by some as inflammatory, Brain notes that "this hypothesis is not borne out by the histological appearances. Inflammatory infiltration is rare and scanty, and when it occurs probably should be regarded as a reaction to degeneration."[10] The presence of a mild degree of inflammation as described by Brain does not appear to constitute a contra-indication for activity in this disease.

In studying the reports that have been made in professional journals on amyotrophic lateral sclerosis, it was noted that, hithertofore, exercise has been an unexploited avenue of approach. After exhaustive microscopic research, Wohlfart reported that

> "In cases of somewhat advanced muscular atrophy the muscle picture is very characteristic. Groups of atrophic fibers roughly in one and the same stage of atrophy lie intermingled with groups of normal-sized fibers. In cases of moderately advanced disease and under typical conditions, groups of atrophic and normal-sized fibers are encountered simultaneously in almost all primary muscle bundles. . . .
>
> Furthermore it might also be mentioned that prolonged inactivity because of long confinement to bed, for example, may render the picture less distinct, for a diffuse and homogeneous atrophy of all the muscle fibers will then mask the typical changes to a visible degree."[11]

Some time ago Delorme realized that "exercise is essential in restoring function to muscles, weakened and atrophied as a result of injury and disease."[12] He found that utilization of the techniques of progressive resistance exercises with weight pulleys, dumbbells, iron boots, etc.—gave results that could only be described as "dramatic." Later he extended this method of treatment to victims of poliomyelitis, the rationale for this being:

> "based upon the hypothesis that, in poliomyelitis the remaining innervated muscle fibers are normal and, therefore, possess the same potentialities for hypertrophy and power as normal muscles. Thus the degree of the muscle's response to exercise should be directly proportional to the number of muscle fibers with intact nerve supply. Results clearly indicate that in poliomyelitis—weakened muscles respond in much the same fashion as do normal muscles, but to a degree proportionate to the number of remaining innervated muscle fibers."[13]

The improvement in the ability of the patients to perform ordinary activities with less effort and fatigue was so satisfactory that DeLorme concludes that:

> Evidence so far . . . emphasizes the necessity for an extended program of exercise. Poliomyelitic patients with severe involvement . . . . who cannot be offered increased functional strength by surgery, have no alternative but to attempt to develop the residual muscle power.[14]

The analogy between the situation existing in amyotrophic lateral sclerosis and that existing in poliomyelitis is most significant. In both cases there are a greater or lesser number of atrophied muscle cells intermingled with normal fibers. In the case of poliomyelitis, DeLorme has shown that the patient can greatly improve his ability to use his body by employing the use of progressive resistance exercises to secure hypertrophy of the remaining normal cells. It seems to the writers quite possible that the same results might be achieved in amyotrophic lateral sclerosis. Granting that the disease is a progressive one and that no amount of exercise can halt it, exercise might at least give the patient a longer period of bodily usefulness even though it may not necessarily increase his life span. Perhaps more important still, the idea that he was doing something for himself might offset the tendency toward fatalistic resignation and depression. At the worst, no damage can be done by trying any treatment differing from one which has been demonstrably unsatisfactory.

The first opportunity for one of the writers to test this hypothesis was presented in the summer of 1949, when a 56 year old female school teacher came to Los Angeles from a city in New York state to consult Dr.

Tracy J. Putnam. Her illness was diagnosed as "Amyotrophic Lateral Sclerosis, atrophy upper extremity, spasticity legs," and, after a consultation with the Corrective Therapist, Dr. Putnam prescribed "Graduated resistive exercises to all extremities."

Specific exercises based on the rationale of DeLorme and Watkins[15] were given to the patient to develop strength in flexion and extension of the fingers, wrist, elbow, and abduction of the shoulder, dorsiflexion of the foot, extension of the knee and flexion and abduction of the hip. Postural correction and development of general body strength and coordination for walking, turning, standing, etc., were stressed. Resistive exercises with the Therapist providing the resistance were employed.

A definite improvement was soon noted in the right hand. The patient became able to pick up and hold objects which she had formerly been unable to handle. She claimed the throbbing in her right arm ceased completely and that she felt generally stronger.

Her doctor in New York had instructed her to give up all forms of activity with the result that the patient slipped into an attitude of defeatism and was making plans to teach from a wheel chair. When it became necessary for her to return East for the opening of the school term it was suggested that she resume her piano playing, golf and bowling, as well as continue her exercises with dumbbells. The improvement in her mental outlook was immediate and marked.

Six months later the Corrective Therapist wrote to inquire how she was progressing. In reply the patient stated in part:

> "I am continuing the exercises using five pounds of weight.
>
> I do notice that I have more strength, but recently the coordination has not been so good.
>
> I still play the piano in the school room, but gave up the rhythmic work as it caused fatigue before the day's work was finished.
>
> Have not resumed golf or bowling, but have continued all other social activities.
>
> The treatment has been beneficial both from a physical and mental point of view . . . .
>
> Until I fell about two weeks ago my friends had noticed that I was walking better than I did last spring.
>
> I trust I have given you adequate information, and may see you again next summer, as I am wondering if I should increase the time with the exercises."

It would, of course, be completely unjustifiable to attempt to draw any conclusion from a "series of one." The disease is progressive and exercise is not a cure. Nevertheless the fact remains that in this case proper exercise enabled a patient who had become resigned to a life of hopeless invalidism to continue her work, and to do so in an improved physical and mental condition. It is noteworthy that the patient is so convinced of the value of these resistance movements that she is voluntarily considering increasing the time devoted to them. Further, by far the greater part of her exercise has been done of her own accord. If she could have remained in Los Angeles where she could have had the supervision and encouragement of the Corrective Therapist her progress might have been even greater. The results suggest that further study along these lines should be made to determine whether the techniques of Corrective Therapy present a new and useful approach to the problem of the treatment of amyotrophic lateral sclerosis.

REFERENCES

1. Johannes M. Nielsen—*A Textbook of Clinical Neurology*—2nd Ed. Rev. New York—Paul B. Hoeber, Inc., 1940. P. 586.
2. Charles Davison—"Amyotrophic Lateral Sclerosis," *Archives of Neurology and Psychiatry*—46:1039—Rec., 1941.
3. Roy R. Grinker—*Neurology*—3rd Ed. Charles C. Thomas—Springfield—1946—Pp. 1040-41.
4. Henry A. Christian—*Osler's Principles and Practice of Medicine*—VEth *Ed.*—D. Appleton Century Co., Inc.—New York—1944—P. 1213.
5. Nielsen, *op. cit.* P. 587.
6. Israel S. Wechsler—*A Textbook of Clinical Neurology*—6th Ed. W. B. Saunders Co.—Philadelphia—1947—P. 131.
7. W. Russell Brain—*Diseases of the Nervous System*—Third Ed. New York—Oxford University Press—1947—P. 604.
8. Nielson, *op. cit.* Pp. 587-8.
9. Rene Cailliet—"*Therapeutic Exercises for Multiple Sclerosis*"—*Journal for Physical and Mental Rehabilitation*—3:9—June, 1949.
10. Brain—*op, cit.* P. 596.
11. Gunner Wohlfart—"Muscular Atrophy in Diseases of the Lower Motor Neuron"—*Archives of Neurology and Phychiatry*—46:1039—Dec. 1941.
12. Thomas L. DeLorme—"Restoration of Muscle Power by Heavy-Resistance Exercises"—*The Journal of Bone and Joint Surgery*—xxvii:645—Oct., 1945.
13. Thomas L. Delorme—"The Response of the Quadriceps Femoris to Progressive Resistance Exercises in Poliomyelitic Patients," The Journal of Bone and Joint Surgery—30-A:834, Oct., 1948.
14. Ibid, J. 846.
15. Thomas L. Delorme & Arthur L. Watkins—"Technics of Progressive Resistance Exercise—"*Archives of Physical Medicine*—xxiv:263-273—May, 1948.

SEND ALL CHANGES OF ADDRESS

to

Louis M. Frazier, Jr., 736 South Graham Street

Memphis, Tennessee

CURRENT CURRICULA RELATED TO PROFESSIONAL EDUCATION OF CORRECTIVE THERAPY

KARL K. KLEIN
Assistant Professor Physical Education
Ithaca College

As an outgrowth of the recent survey on Curriculum Preparation for Corrective Therapy the author will attempt to indicate the advancements that have been made by the various educational institutions to advance the educational standards of Corrective Therapy.

It is the ultimate objective of this article to aid the various Veterans Administration Rehabilitation Centers, as well as other civilian Rehabilitation Centers, in their problem of locating adequately trained personnel to fill the numerous available positions becoming available in the Rehabilitation field. It is the opinion of the author that the educational institutions advancing such training standards should be encouraged in their efforts by considering the graduates of such institutions for available positions.

The majority of opinions expressed by the jury of evaluating experts in the original survey indicate that a program of educational training for Corrective Therapy should be conducted on the graduate level. The institutions that have assumed the leadership in this particular program have so planned their curricula and have met the basic requirements of this jury's opinion.

An innovation to the professional training program has been instituted by one of the schools now interested in the educational program of this field, and it has established a four year undergraduate curriculum with the major emphasis being placed on Corrective Therapy. The basic requirements of a degree in physical education are also being met. This school is Pepperdine College in Los Angeles, California. Their program will be discussed under undergraduate curriculum programs.

A survey conducted by the author in 1949 of thirty-nine colleges and universities, related to courses being offered in corrective physical education, indicated that twenty-eight of the colleges and universities were offering one or more courses related to corrective physical education. Some of these institutions stated that all or some of the courses, such as anatomy, physiology, general and educational pesychology, kinesiology, remedial or corrective physical education and physiology of exercise, were being offered.[1]

Results of the survey indicated the general tendency of these teacher preparatory institutions to meet the basic educational standards of Corrective Therapy. It is assumed that the curricula of these institutions of higher learning are adequately impregnated with physical education skills courses.

The results of this survey indicate the potential for adequate training is available. With the necessary addition of the classroom and clinical training that was indicated in the original survey for Corrective Therapy, many of these colleges and universities could adequately assist in the training program.

The primary objective of this particular problem is to indicate the colleges and universities that are facilitating their standards to meet the growth of Corrective Therapy training. Such training programs will be discussed under graduate and undergraduate curriculum programs.

GRADUATE CURRICULA PROGRAMS

To the knowledge of the author there are three institutions now offering a graduate curriculum, leading to a graduate degree, directly related to the specialization of Corrective Therapy. They are Springfield College, Springfield, Massachusetts; New York University, New York City; and Teachers College, Columbia University, New York City.

These institutions were included in the recent "Curriculum Survey for Corrective Therapy" and have since then made various curriculum revisions for the apparent enhancement of their programs.

The offerings of these institutions are as follows:

SPRINGFIELD COLLEGE; CURRICULUM TITLE—PHYSICAL EDUCATION AND RECREATION IN REHABILITATION

Bulletin Statement—A full graduate program for training specialists in corrective physical education in schools and for rehabilitation work is sponsored by the major in Physical Education. The requirements of their program are very exacting.

An undergraduate major in Physical Education is considered a prerequisite for entrance into this graduate program.

1. Correspondence with the schools included in survey.

Fall Courses

Course No.	Course Title	Semester Hours
Bio 370	Anatomy applied to Rehabilitation	2
PE 373	Body Mechanics and Kinesiology	2
PE 376	Adapted Sports and Recreational Therapy I	2
PE 381	Field Work I	2
PPS 331	Abnormal Psychology	2
Ed. 325	Educational and Social Research	2

Winter Courses

Ed. 327	Thesis Seminar	2
GPS 372	Orientation to Neurology and Psychiatry	3
GPS 222	Principles and Techniques of Guidance	2
PE 374	Corrective Physical Education applied to Pathological Conditions	2
PE 382	Physiology Applied to Reconditioning	2

Spring Courses

Physio 371	Adapted Sports and Recreational Therapy II	2
PE 377	Seminar in Physical Rehabilitation Materials	2
PE 378	Field Work III	2
PE 383	Course in Community or Social Relationships	2
Ed. 328/9	Thesis or Project Credit	2-4
	Total required for Masters Degree	35-37

NEW YORK UNIVERSITY SCHOOL OF EDUCATION CURRICULUM
TITLE – ADAPTED PHYSICAL EDUCATION

Bulletin Statement—This program relates only to the graduate degrees and is for the training of those concerned with corrective activities of the physically handicapped in public schools, and for the training of corrective therapists for employment in veterans or private hospitals.

Corrective Therapy is related to the medical services and is a new and rapidly growing professional agency for the readaptation and rehabilitation of the hospital patient as well as the school child. More and more public schools are instituting programs in corrective activities and are demanding specifically trained leadership.

Course No.	Course Title	Points
*380.7, 8	Research Seminar in P. E., Health Ed. and Recreation	6
*380.12	Research Methods in P. E., Health Ed. and Recreation	3
280.7, 8	Problems of P. E., Health Ed. and Recreation	6
280.57, 58	Interpretations and Objectives in P. E., Health and Recreation	6
280.135 or 136	Fundamentals of Body Mechanics and Posture	3
280.138	Corrective Activities for the Physical Handicapped	3
180.503	Recreational Techniques in Rehabilitation	3
180.134	Adapt. of P. E. Activities for the Atypical Individual	3
180.131	Anatomy, Physiology and Hygiene of Orthopedic Defects	2
180.438	Observance and Practice in Adapted P. E. Programs	3
160.63	Health Counseling	2
135.25	Psychology of the Physically Handicapped	2
231.923	Vocational Rehabilitation Practicum I	1
120.71, 72	Physically Atypical Children	4
220.52	Personality and Social Adjustments I	3

TEACHERS COLLEGE COLUMBIA UNIVERSITY

Physical Education and Recreation in Rehabilitation

*I. *Education Requirement* (Proposed)

Ed. 200Fb (3 pts.) and courses selected from the following list:
Ed. 200MH, Ed. 219PA, Ed. 219TD, and Case Work 140 at the New York School of Social Work.

The program at this institution is in the process of revision and is not ready for publication at the present time. There is every indication that this revised curriculum will be an asset to the professional preparation for Corrective Therapy.

At the present time the above listed institutions are the only ones presenting a complete graduate curriculum for which a graduate degree is given. The major emphasis of such programs may be considered as preparation for professional training in Corrective Therapy.

Syracuse University at Syracuse, New York, includes a number of courses directly related to Corrective Therapy but does not offer a complete graduate curriculum in their particular area of study. The courses offered are as follows:

Course No.	Course Title	Semester Credits
Sec. Ed. 136	Advanced Corrective Physical Education	2
Sec. Ed. 137	Practicum in Advanced Corrective P. E.	2-6
Sec. Ed. 138	Recreational Activities for Physical Handicapped	2
Sec. Ed. 202	Developmental and Remedial Programs in Physical Ed.	2

UNDERGRADUATE CURRICULUM PROGRAMS

Other teacher training institutions that have expressed a definite interest in the Corrective Therapy educational problems and are presenting specialized course material on the undergraduate level are Pepperdine College, Los Angeles; Ithaca College, Ithaca, New York; and the University of Kentucky in Lexington, Kentucky.

PEPPERDINE COLLEGE CURRICULUM

In discussing the education program of Pepperdine College, Dr. Harvey E. Billig,[1] Medical Director of the Billig Rehabilitation at that college, is of the opinion that the Corrective Therapist with a physical education background, properly trained, is qualified for this work.

The Doctor's experiences as a Commander in the Naval Medical Corps at the San Diego and Long Beach Naval Hospital enabled him to draw his opinions concerning physical education in Rehabilitation. Dr. Billig further stated, "they did a wonderful job of rehabilitation therapy on those hospital patients." He is also cognizant of the fact that the ability of the corrective therapist to do a qualified job has been somewhat settled by the Veterans Administration in rating them equally with other therapy groups.

The Pepperdine College program is the first established on the four-year basis. The B.S. or M.A. degree is awarded upon completion of the courses of study. The four-year program is outlined to meet the qualifications of physical education preparation with specific courses related to corrective therapy as part of each years training. Yearly areas of elective selection enable the student to further enhance his corrective therapy training through such selection.

Specific course material is first presented in the junior year and continues through graduation. The curriculum presentation is as follows:

Fall Term

Junior Year

	Units
Rehabilitation for the handicapped—171	3

Senior Year

Functional Anatomy and Muscle Training—173	3
Corrective Physical Education—177	3

Spring Term

	Units
Individual Corr. Clinic—186	2
Advanced Correctives—179	3

Elective courses totaling fifteen (15) semester hours may be selected beginning in the sophomore year. Further catalogue courses are as follows:

Course No.	*Course Title*	*Units*
167	Recreational Therapy	2
168	Spastic Therapy	3
174	Massage and Relaxation Techniques	2
175	Psychotherapy for the Handicapped	2
178	Body Mechanics	2
187	Clinical Diagnosis and Rehabilitation	2

ITHACA COLLEGE CURRICULUM

The Ithaca College program was instituted to aid in the educational advancement and training of potential therapists for the field of Rehabilitation.

The program was originally outlined at the school and discussed with the Director of Physical Medicine Rehabilitation and Corrective Therapists of the Bath, New York, veterans hospital. The program was approved by Dr. K. G. Hansson, Medical Director of

[1] Correspondence with Dr. Billig, September, 1950.

the schools department of Physiotherapy.

The primary objective of the School for Health and Physical Education is teacher training. The interests in Rehabilitation were motivated to aid the growing educational needs of this related area of Physical Medicine and Rehabilitation.

The original curriculum, as planned, was to be administered as an elective series of courses totaling eighteen hours of study in eight areas related to the problems of rehabilitation. Although the program has not been fully inaugurated, active steps are being taken to correlate the proposed program in the physical education curriculum. The courses offered are as follows:

Course No.	*Course Title*	*Semester Credits*
285P	Fundamental Therapeutic Exercise	2
285P	Fundamental Therapevtic Exercise	2
	Hospital Practice (hospital level)	2-3
	Corrective Physical Education Clinic	2

UNIVERSITY OF KENTUCKY CURRICULUM

The University of Kentucky curriculum is still somewhat limited in its scope of definite course material related to Corrective Therapy but the counseling given by Dr. C. W. Hackensmith, Professor of Physical Education, in relationship to the various therapy fields, has stimulated many students to follow one of these specialized areas in graduate study. The program of specific course material other than those basic courses of physical education related to Corrective Therapy are No. 173—Remedial Physical Education and No. 174—Techniques of Rehabilitation, a field work program in the federal, state or private hospital in Lexington. Dr. Hackensmith expressed a desire to enrich the curriculum of courses related to this field in the near future.

Although course descriptions are not included in this study, the use of course titles alone will give the reader an insight into the curriculum of study that each of the listed colleges and universities are presenting in an effort to advance the educational preparation for Corrective Therapy.

It is the profound hope of the author that further advancement of professional preparation in Corrective Therapy will be made and that continued progress will be made toward uniformity of Corrective Therapy curricula.

---

* EDITOR'S NOTE: It has been brought to the attention of the editor that, in addition to the schools that are mentioned by the author, several other schools are offering courses designed to equip the physical educator for work in Corrective Therapy. The University of Illinois, Ohio State University and the State University of Iowa are offering courses in their curriculum that include theory and practice in the application of adapted physical education methods for the rehabilitation of the disabled.

This is further evidence as to the effort of the colleges and universities to advance the educational preparation for Corrective Therapy.

REPORT ON SWIMMING THERAPY IN A "V.A." HOSPITAL

ROBERT KRAMER, Corrective Therapist
V.A. Hospital, Sheridan, Wyoming

Swim therapy has been in operation since October, 1948 under the supervision of the present Corrective Therapist, whose date of appointment coincides with that date.

The first group of patients receiving swim therapy were those scheduled for post-insulin treatment. Patients undergoing insulin therapy go to the treatment pool twice a week, usually Tuesday and Friday, in the afternoon. They are permitted to swim and play with a light, air-filled rubber ball. The water temperature is kept below body temperature, at about 75 to 85 degrees. This is done to prevent excessive perspiration after leaving the pool and for the benefit of stimulation. It is observed that patients are "waking up" faster, becoming more alert, and are losing or forgetting some of the unpleasant symptoms such as headache, nausea, sleepiness, commonly expressed after having experienced insulin therapy during the morning hours. Care is taken to prevent over-exertion or over stimulation of patients in order to avoid an insulin reaction.

The duration of water contact of patients depends on the individual and his reaction to the water. The number of comas, days of insulin treatment and the patient's general condition determine the length of time in the pool. The minimum of water contact is set at five minutes while the maximum is set at about 35 minutes.

Patients having their first comas or their first week of insulin therapy or those who had an exceptional reaction are usually kept in the pool no longer than ten minutes. Patients who are already adjusted to treatments and procedures may stay in the pool up to 35 minutes. (Sometimes the instructor has a hard time to get such patients out of the pool). A cool shower and a self-administered rubdown with a bath towel is encouraged. Patients report that they feel

[1] Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are a result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

much better after swim therapy and that they enjoy much more the following social and recreational activities. Besides the stimulating value of swim therapy the patients appear relaxed. Aggressive tendencies seem to be under better control and a more social attitude is definitely visible. The number of patients treated varies from seven to eighteen depending on the number of patients receiving insulin.

The next group of patients for whom swim therapy was prescribed are hyperactive patients from continued treatment service wards 6A and 6B. The major problem here, is to let the patients expend their excess energy in the water so that they will react better on the ward and may show fewer adjustment problems. These patients are kept from 30 to 40 minutes in water of about 85 to 95 degrees. A warm shower is suggested to finish the class period. Activities such as fast ball games in the water as well as swimming races and underwater swimming are introduced. Strict enforcement of game rules and pool regulations are emphasized in order to cultivate sportsmanship and better social relationship. The patients appear somewhat tired and quite relaxed and more manageable after such swim therapy classes. These classes are held from November Until June, about twice or three times a week. In summer enough opportunity is given to the patients to work out their excess energy in the form of ball games and other outdoor activities. Swim therapy for this type of patient started in November, 1948.

In February, 1949, swim therapy classes were introduced for certain electric shock therapy patients and for patients in need of physical reconditioning. The latter type of patients consist of individuals who have finished the acute treatments and are on observation status prior to being discharged or transferred to a privileged status with a full time work assignment. The treatment objective with such patients is to build them up physically and otherwise, so they will be able to perform a full days work, either at the hospital or at their place of employment after discharge. A "short dip" and swim of no more than 15 minutes is suggested before or after other physical medicine rehabilitation activities. A good rubdown is accepted as a proper termination for the swim. Rules of hygiene and good living habits are taught to such patients contemplating discharge from acute-intensive treatment. Electric shock therapy patients are encouraged to perform exercises and activities in the water which will help them to regain better balance and contact as soon as they are out of the water. The temperature of the pool is kept rather cool while the air is regulated so that a warm and pleasant feeling is experienced by the patients after leaving the pool. This treatment is given either on an individual basis or at the most to a group of six patients, five times a week but for no longer than three consecutive weeks.

Another group of patients started swim therapy in February, 1949. This group consisted of four to five patients. They were either partially paralyzed (paraplegics, post-polio), or Huntington's Chorea patients. The purpose in swim therapy, or rather, pool therapy, for these patients is reeducation of muscles and muscle groups so that a better locomotion and coordination of movements may result.

Three patients gained considerable voluntary control and strength of their muscles so that some of them could walk for short distances. The post-polio patient improved in gait and strength to such an extent that he is now working and making a living for himself and his family. The patient with Huntington's Chorea showed only temporary improvement. While taking pool therapy his involuntary muscle spasms became more moderate and the ward doctor was able to reduce medication.

These patients were kept in the pool for about 25 minutes. Walking and such movements as the patient could not perform out of the water were emphasized. The therapy lasted six months for each group or until the ward doctor decided that the patient had received maximum benefit. The temperature of the water was kept at about 85 degrees. This treatment is given three times a week, preferably before meals.

In June, 1950, swim therapy was introduced to a ward on the acute treatment building, ward 86D. This ward represents patients with the most adjustment difficulties. After the patients receive physical therapy they are taken in groups of not more than 15 to the swimming pool. The temperature of the water again is kept, as for other hyperactive patients, at 85 to 95 degrees. Exercises with the ball, swimming and underwater movements are encouraged. Patients in a state of excitement or acute hyperactive behavior are kept for about 30 minutes in the pool, while the rest of the patients remain only 15 to 20 minutes. A self-administered massage and rubdown finishes the treatment period. Very strict enforcement of safety and pool regulations are mandatory. Such therapy classes are scheduled every working day from 10:00 to 11:00 in the morning. It has been observed that the patients are more relaxed and quite calm after leaving the pool. Ward personnel report that since this treatment was introduced fewer aggressive actions by certain patients have been recorded. The treatment pool is utilized by about 50 to 60 patients daily. With the exception of hours for cleaning and care of the pool, all scheduled therapy classes are held on time.

THE NATIONAL MULTIPLE SCLEROSIS SOCIETY*

J. J. KARPELES, M.D., President, Multiple Sclerosis Society
Los Angeles, California

Since before the third century the enigma we know as Multiple Sclerosis has interested and baffled thousands of scientists. It remained, however, for Charcot and his school in the sixth and seventh decades of the last century, following the close study of many cases, to crystallize the earlier observations and to publish the symptomology and pathology of the disease much as we know it today.

The seeming inertia on the part of good analytic minds eventually caused the victims of this disease to exclaim—"Why doesn't someone do something?" In response to this cry for aid the National Multiple Sclerosis Society was organized some five years ago. We like to think that the renascence of interest in the problems of demyelinating diseases has in some small way been stimulated by the efforts of the National Multiple Sclerosis Society.

Since the inception of our organization some five years ago, the society has become the focal point for inquiry into all problems arising in this field. Patients, relatives, doctors, hospitals, voluntary health organizations, governmental agencies—both here and abroad—appeal to us for information, guidance, and aid in their efforts to combat the problems posed by multiple sclerosis. The Office of Vocational Rehabilitation, for example, turned to this society for information in an effort to modify the traditional viewpoint that rehabilitation is not feasible in Multiple Sclerosis. The communication from that agency stated in part —"Without such clarification by the society, we fear that the traditional classification of this group as victims of a chronic, incurable, uniformly progressive and totally disabling disease might operate to include the whole group as ineligible or unfeasible. We hope you may find it possible to write up a description of the patient feature of Multiple Sclerosis and of the rehabilitation possibilities with appropriate criteria."

We realize that one of our signal responsibilities is to furnish the physician and therapist with the latest available information regarding the diagnosis and treatment of Multiple sclerosis. In 1947, a small fifteen page booklet entitled "Manual of Information For Use By Physicians" was distributed among several thousand physicians. The demand for information by the Medical profession was so great that on November, 1950, a second and larger publication "Multiple Sclerosis and Its Treatment" by George A. Schumacher, M.D., was distributed to some 10,000 physicians. This publication was a critical review of current information about Multiple Sclerosis and of the status of its therapy prepared for distribution to the medical profession. The most recent publication to appear is a comprehensive manual entitled "Physical Therapy, Physical Medicine and Rehabilitation in Multiple Sclerosis." This monograph has been prepared by Dr. Edward Gordon under the direction of Dr. Howard A. Rusk and published in June, 1951. Projected for future publication and not likely to be available for some time are four patient manuals, a monograph on the Psychological implications of Multiple Sclerosis, and a manual on Psychotherapy for patients.

As in answer to the inquiry made by the Office of Vocational Rehabilitation, Dr. Gordon stated in his monograph that, "In the light of recent experience, there is a change away from the attitude that Multiple Sclerosis is invariably a rapidly progressive disease and that little beyond diagnosis can be done for those so afflicted." This change is not due to any fundamental advances in knowledge of the etiology or treatment of the disease itself—for none so far has been forth-coming. Recent work has, however, shown that the average duration of the illness is much longer than what was previously believed.

Indeed the average life expectancy in Multiple Sclerosis is not much less than that of the general population. On this premise, the care of a patient who has Multiple Sclerosis demands of the physician a positive attitude fostering a spirit of hopeful management. The objective is to teach the patient how best to live with his disabilities and how best to exploit residual capacities to the fullest possible extent. To this end the techniques and devices developed in the field of rehabilitation can be employed so that the patients life can be made productive — if not productive, self-dependent — and if not self-dependent, at least tolerable.

We further realize that still another of our responsibilities is to bring a message of hope and optimism to the patients, their families and friends. It is also our responsibility to raise funds to support basic and clinical research in the field of the demyelinating diseases and to coordinate such research activities. In response to the awareness of these responsibilities,

* Presented at Fifth Annual Scientific and Clinical Session of the Association for Physical and Mental Rehabilitation, July 3-7, 1951.

the National Multiple Sclerosis Society has supported eleven research projects including five clinics in leading medical centers throughout the country. Its prime support comes from a membership of approximately 16,000 people located in all of the forty eight states and foreign countries as well. From available figures, it is estimated that well over 100,000 people may be suffering from Multiple Sclerosis.

The functions and responsibilities of the National Multiple Sclerosis Society are indeed manifold as you can see. We are a young organization. We feel that we have accomplished much. However, much more has yet to be accomplished. To this end we invite your aid. You will come into contact with many Multiple Sclerotics. We believe you can be of assistance to them. Please feel that the National Multiple Sclerosis Society stands ready at all times to assist you in any way it can.

National Membership Drive of 1951

This is the fifth year of our Association. During this period the Corrective phase of Physical Education has become an integral part of Physical Medicine. We are out to make this a banner year with further advances toward establishing ourselves as important factors in the rehabilitation of the disabled. To do this we need your help. We realize that it is not possible because of financial and many other factors for all of our membership to attend our yearly conventions or other rehabilitation meetings. But it is possible for all of us to help secure the resources and members necessary to further the field of our interest. All we ask of you is to get ONE member for this year. This may be an active member at $6.00 who meets the necessary requirements or an associate member at $4.00 per year. The associate member may be one of many categories of people: Friends, immediate family, allied rehabilitation workers, doctors, nurses, merchants with whom you deal or any other person, who is at all interested in your welfare and the welfare of the disabled. Surely every member with a little concerted effort can secure a member. Our aim is to double our membership for the coming year. With your help we can do it.

HY. S. WETTSTEIN

National Membership Chairman

Note: Application blanks are being mailed to every active member.

"From Other Journals"

Some pertinent facts about

Muscle Development in Athletic Training

EVELYN LOEWENDAHL
University of California
Los Angeles

Those of us in the field of training muscles for specific action can learn a great deal from poliomyelitis patients. This unfortunate disease makes possible the study and observation of very specific muscle action. Not only are single muscles themselves removed from activity, but parts of one muscle.

For example, in lifting the fingers in extension motion, the fourth and fifth fingers may fail to extend while the second and third fingers may still be able to lift upward. This means that only part of the extensor communis digiti muscle has dropped out of action. When one has polio one learns minute action and actual function of separate muscle groups. Would we not be remiss in our task as teachers and body trainers if we did not apply this functional knowledge to our own specific programs? This procedure represents a direct application of scientific knowledge for practical purposes.

In a coaching and training program the following muscle functions are extremely important.

The "Take-Off" Muscles of the Foot

We have learned through our anatomy and kinesiology texts that the chief lifters of the heel are the two calf muscles *viz.*, the gastrocnemius and soleus muscles. Even when these muscles are partially paralyzed, as in polio, the individual can rise on his toes about one-half inch, so long as he remains on both feet. As an experiment, however ,let us all try the motion of standing on our toes, our heels lifted, our toes gripping the floor. Now stand with the feet flat and roll the toes upward toward the forehead. With the toes maintained in an upward turn, try to rise up from the floor with the heel off of the floor. It will be noted that this is not easily accomplished, if the motion is started at all. The calf muscles will initiate the rise of the heel ,but the toe curlers will give the propelling force or final phase of the take-off.

In other words, we have observed in polio patients that in spite of the fact that they have paralyzed calf muscles they are able to develop an adequate take-off by use of the toe-flexor muscles which when overdeveloped (hypertrophied) can more than compensate for the calf muscles.

In a gait-training program, the toe action is brought into play so that a very slight, if any, noticeable "heel walking" action ,takes place. The application of this knowledge to a conditioning program is obvious. For those who are concentrating upon developing champions for such events as track, broad jumping, and pole vaulting, the overdevelopment of the toe-flexor muscles will make the difference between winning and losing. To be sure, there are other factors which come into play in muscle action. We are now speaking of one factor, namely the development of muscle power.

In naming specific exercises for resistive movement which is the means of developing increased for superior muscle power we must recall some basic factors. First of all, let us understand the principle which states that by developing power we mean the maximum pull calling forth the maximum performance by all musculo-neutral connections which in turn develops maximum size.

If we understand this principle, we know then that a toe-curling exercise in the living or sitting position will not develop hypertrophied toe flexors. The entire weight of the whole body in the standing or running position will call for the maximal pull, and hence such exercises as walking in the sand or grass with emphasis on the toe curlers will serve as resistive motion to develop toe flexors. The pain and strain felt in the calf after playing games in the sand for the ordinary person whose foot is splinted in a shoe in working hours is not the gastrocnemius or soleus muscles principally (or perhaps they too are being called upon beyond capacity, if the person is in a sedentary occupation) but the flexor digitorum longus muscle which is located on the posterior surface of the tibia, just underneath the calf muscles. Running in the sand takes a powerful toe-curling action, and if that medium is not present, grass may serve as a second choice.

Lateral Balancers of the Foot

Again our polio patient presents the important muscle which is really responsible for stabilizing the foot. One of the most common muscles removed from action in the foot after a polio paralysis is the anterior tibial. This muscle lifts or, in other words, "hangs on" to the foot. When absent, the foot hangs down in a dropped position. This condition can be hazardous at curbs and steps when the individual does not clear the height and thereby stubs his toes.

In muscle reeducation, the patient is taught to obtain a knee and hip lift to compensate for the dropped foot. When the other leg muscles are present this method is quite successful. Otherwise, arti-

ficial supports of the foot are in order, if the toe extensors cannot be trained to take over part of the function of foot lifting. This problem is not difficult nor impossible to solve.

There is quite another story however, when the posterior tibial muscle is absent or partially functioning. The lateral instability set up by the weakness of this muscle is a real hazard. The foot in such an instance, assumes a pronated position, and the rest of the body is thrown out of alignment. The knee and low back pains which result from the shortening of tissues are just a beginning of many other additional hazards initiated by a weak posterior tibial.

When the reviews the anatomy of the posterior tibial, the numerous attachments it has, the navicular, calcaneus, and cuneiform bones, in addition to the second, third, and fourth metatarsal, one realizes the veritable anchor that it provides for the whole foot and ankle. It serves the same purpose that the ground floor does for a thirty-seven story building. When one reviews the fact that upon the domed foot held in mid-position by the posterior tibial, there is balanced a skin bone, a leg bone, a hip bone, 33 vertebrae, and a skull, the importance of the job of the posterior tibial becomes apparent.

In such sports as basketball, hockey, skiing, ice skating, to mention a few in which ankle control and strength is of utmost importance, resistive exercises to the posterior tibial must be emphasized in a conditioning program.

These movements should be performed in the standing position with the weight of the body on the foot and with the fore part of the foot in an inverted position. For example, in one ski conditioning exercise the heels are turned outward, toes pointed inward, knees pressed together, and the body erect. From this position the individual alternately bends and straightens the knees. By the pressure of the hands on the thighs the maximal pull can be produced.

Abdominals

The last musculature to harden and the first to soften is that of the abdominal region. Functionally they do not play an important role in our culture. Our polio cases have taught us that with an almost complete absence of abdominals we can still walk with our leg and back muscles, and front hip muscles. The abdominal sag can be made to be more comfortable with supporting girdles. However, in most sports the absence or weakness of abdominals spells a hazard. Since these muscles are not called into play in everyday life to any great extent, they need special attention.

Here again, we must keep the anatomy in mind and call our attention to the fact that there are three layers of abdominal musculature. It is not only the front group (rectus abdominus) which needs strengthening, but also the side walls, the external and internal obliques, which need special attention.

The strengthening of abdominal musculature calls for specific movements which must be performed specifically to be effective. A champion flutter kick in swimming requires very strong abdominals. The basketball player, the tennis and badminton player, to mention a few, all need strong and active abdominals for superior performance.

With hands on the head, in a back lying position, and with the knees bent, the individual gets a maximal pull on the rectus abdominis in coming to a sitting position. This is a better exercise than the traditional hooking of the feet under the bars with the legs straight and the arms at the side. In this latter position, the weight of the arms eliminates some of the pull of the abdominals in the initial phase of sitting up, and the balance of the sit-up is accomplished mainly by the hip flexor muscles so that one actually gets very little abdominal exercise *per se*.

With hands on the head and knees bent, one can rise to a sitting position with the trunk twisted first in a side twist and then lead with the elbow to the opposite knee. This may be alternated from side to side and as a result the lateral abdominals are called into action chiefly. Resistance is gradually applied to all these motions for hypertrophying of the abdominals. The trunk twists and forward bends all given in a standing position for abdominals are satisfactory except that in this position one is working with gravity and not against gravity, and hence one cannot develop a maximum strength of this specific muscle group without exerting the maximal pull, which would be against gravity.

In summary the author, who has observed thousands of polio cases, desires to point out specific muscle functions and their application to a conditioning program:

1. The toe flexors will develop an improved and superior take-off.

2. The posterior tibial is the main stabilizer of the foot for balance of the ankle, and hence the rest of the body.

3. The conditioning of abdominals calls for very specific exercises which call the abdominals into action chiefly.

With the application of scientific knowledge and new methods athletic trainers will be able to produce maximum performance in their teams with a minimum of hazard.

———

Reprinted from the Journal of the American Association for Health, Physical Education, and Recreation, 21:6 (June, 1950), pp. 331-332, J580.

(Continued on page 27)

EDITORIALS

JOHN EISELE DAVIS AWARD

One of the highlights of the recent convention held in Hollywood was the initiation of the John Eisele Davis Award, honoring our friend, leader and founder, Doctor Davis. This award will be presented each year, to an active member who has contributed most in our field of endeavor. Doctor Davis was selected by the Representative Assembly and Board of Directors to receive the first award as a symbol of our appreciation of his untiring efforts in our behalf since the inception of Corrective Therapy. A formal presentation will be made at the annual meeting in Milwaukee, Wisconsin.

At our colorful and stimulating convention banquet, held on July 5th at the Hollywood Roosevelt Hotel, Doctor Davis was also presented the first Association Lifetime Membership by the President. This presentation represented a small token of the membership's sincere appreciation for a leader of whom any professional organization would be proud. It was a gala occasion and marked another milestone in the progress of the Association. It is fitting, that this first award be presented to Doctor John Eisele Davis, for he has been untiring in his efforts to promote the welfare of our Association. Doctor Davis is never too busy to keep him from guiding our efforts. He has earned the right to be called the founding father of the Association. His optimism is contagious; his counsel full of sincerity.

SUSTAINING MEMBERSHIP

The new membership classification under "Sustaining", was approved at the Association convention in order to give interested persons the opportunity to support financially the ideas of our organization. Heretofore there has been no classification of Association membership that would allow participation over and beyond the regular membership fee.

The Sustaining member will receive the Journal for one year. A member or non member is entitled to participate with only one qualification necessary, the desire to promote the welfare of our Association.

The first contribution through sustaining membership came from Miss Dorothy Brandes of Hollywood, California. Miss Brandes has long been a friend of Corrective Therapy and her generosity is sincerely appreciated.

The President Reports

Five years of active and useful service have been completed by the Association for Physical and Mental Rehabilitation. They have, indeed, been years of growth, progress and accomplishment. The purposes to which our entire organization is devoted are being carried forward ably and enthusiastically. Our past and present officers have given unselfishly of their time in the interests of our membership.

One of the most recent displays of outstanding cooperation was at the Fifth Annual Convention held in Los Angeles, California. The convention chairman, Burr Zachary and the Southern California chapter accomplished an overwhelming success in presenting a most scientific and professional meeting. One of my great joys and satisfactions was to meet the individual members of our dynamic West Coast group. Your president was given the opportunity to point out the many important ways in which the National Association serves its membership and justifies the investment which the individual member makes towards the support of the parent organization.

Our National Association is dedicated to the advancement of the field of Physical Medicine Rehabilitation and the development of Corrective Therapy as a dynamic therapy.

In order to accomplish this it is necessary to enlist the aid of every one of you throughout the country. It is imperative for you to form new State chapters in those areas where none exist. As President of your organization I intend to disseminate information to all area chairmen of the affiliated Association chapters for discussion among the membership. This method of communication will channel all Association business to every member and thus aid in decentralization of required actions.

With the publication of this Journal many of our members throughout the country will have received appointments to various Association committees. It is urgent that the committees function immediately in order to accomplish the necessary goals at an early date. I will publish factual material as to the accomplishments of each committee in this Journal.

Leo Berner

"NOTHING IS REALLY WORK UNLESS YOU WOULD RATHER BE DOING SOMETHING ELSE"
—Sir James Barry

Chapter Activities

THE FIRST CHAPTER REPORTS

An informal get-together of Harry Hart, George Devins and Harold Brenner in December of 1949, resulted in the organizational meeting of the California Chapter of the Association.

The first meeting was held on December 9, 1949. There were twenty four Corrective Therapists present, representing Birmingham, Wadsworth and Brentwood V. A. Hospitals. Elections were held and the officers elected were Harry Hart, President; David Anderson, Vice President; Richard Fowler, Secretary and Clint Rankin, Treasurer. It was decided that meetings should be held monthly, alternating between business sessions and program meetings. These program meetings were held throughout the year.

March 19, 1950—Kabat-Kaiser Institute Auditorium

Speakers:

C. C. Troendegaard, M.D., Chief, P.M.R.S., Birmingham V. A. Hospital. *"Corrective Therapy in a General Hospital."*

Richard Freeman, M.D. Brentwood, N. P. Hospital. *"Corrective Therapy in an N. P. Hospital."*

Al Arps, President California chapter, Association H. PE. & R. *"Corrective Physical Education In The Los Angeles School System."*

May 15, 1950—Kabat-Kaiser Institute Auditorium

Speakers:

Thomas F. Barrett, M.D. Chief, Professional Services, Wadsworth V.A. Hospital. *"Some New Problems to be Considered in Rehabilitation."*

John H. Aldes, M.D. Chief, PM&R, Cedars of Lebanon Hospital, Los Angeles. *"Recent Trends in Amputee Rehabilitation."*

July 21, 1950—Wadsworth V.A. Hospital, Medical Library.

S. A. Weisman, M.D., Associate Professor of Medicine, U.S.C. Los Angeles, Cal., *"Chest Development in Relation to Heart and Lung Disease.*

Joseph Pessin, M.D., Director of Professional Education, Brentwood VA Hospital, *"The Importance of Psychiatric Orientation in Rehabilitation."*

During 1951 two programs sessions were held.

September 23, 1951—Wadsworth General Hospital, Library,

David Grossman, Ph.D. Lecturer in Psychology, U.S.C., *"Therapeutic Conversation."*

December 19, 1951—Cedars of Lebanon Hospital, Los Angeles, Cal., A Symposium on Multiple Sclerosis.

Speakers:

Dr. J. J. Karpeles, Director of National Multiple Sclerosis Society. *"The Functions and Objectives of the National Multiple Sclerosis Society."*

Tracy J. Putnam, M.D., Chief, Neuro-surgery, Cedars of Lebanon Hospital. *"The Medical Aspects of Multiple Sclerosis."*

Dr. Philip Soloman, Psychiatric Service, Cedars of Lebanon Hospital. *"New Trends in the Treatment of Multiple Sclerosis."*

In addition to the Program Meetings, the local chapter project for the year 1950, came about as a result of a newspaper article, in which a plea was made for a loan of a wheel chair for Bobby Patwell, 11-year-old son of a former hospitalized Navy gunner. Bobby tried to put one a brush fire with a can of water, which turned out to be gasoline. Bobby was burnt from the waist down—and can't walk.

This article appeared in the paper the beginning of May, 1950, about three months after the accident occurred. On May 20th the California Chapter adopted Bobby with the pledge to get him back on his feet. Dr. O. Leonard Huddleston, Director of the Kabat-Kaiser Institute at Santa Monica, California, examined and prescribed treatment for Bobby. Corrective Therapists Larry Weeks, Harry Hart and Harold Brenner then began the work. Six weeks later Bobby was running in the outfield to make a catch in the playground baseball game.

The 1951 elections of Officers were completed with Murray Levitta, President; Philip West, Vice President; Harold Brenner, Secretary; Merton Olson, Treasurer.

The first open or program meeting was held in April at Cedars of Lebanon Hospital.

Speaker:

Charles W. Goff, M.D. Assistant Clinical Professor of Orthopedic Surgery at Yale University Medical School, and Lecturer in Anthropology, Americal Academy of Orthopedic Surgeons, Hartford, Conn. *"Background of Man in Relation to his Rehabilitation."*

The chapter project for 1951 was the Annual National Convention of the Association. The meeting was a magnificient success. Thirty-three outstanding authorities in all phases of physical and mental rehabilitation presented papers of outstanding character to our increasing membership representing every area of the United States.

H.J.B.

SECOND ANNUAL SOUTHEASTERN CHAPTER MEETING

The Southeastern Chapter of the Association for Physical and Mental Rehabilitation will have it's second annual meeting in Atlanta Georgia, October 13th, 1951

Physical therapists, occupational therapists, corrective therapists and physicians will present a full day"s program of clinical and technical significance.

It is anticipated that a majority of the corrective therapists in the area will attend as well as many physical and occupational therapists, from the seven Southeastern States.

A TREND IS SHOWING

The first Physical Education major in the Southeastern Chapter area, to receive training in a Veterans Administration Hospital has just completed a semester of work.

This training was taken at the V. A. Hospital in Tuscaloosa, Alabama, in fulfillment of his practice teaching requirement for the University of Alabama Physical Education Department.

Louie Hussey, Chief of Corrective Therapy, reported mutual benefit to hospital and student by this arrangement.

Such an arrangement is in operation at the University of Kentucky, in Lexington Kentucky, and a plan is being worked out with Memphis State Teachers College, Memphis, Tennessee, that will accommodate six students each semester with a trainee assignment at VAMTG Kennedy, Hospital, Memphis, Tennessee.

SEX LIFE OF THE HANDICAPPED POLIOMYELITIS VICTIMS

Harvey E. Billig M.D. and *Evelyn Loewendahl.* Published by Storm Publishers, Inc. 420 Lexington Ave. New York 17, N. Y. Price $3.00

This book is a scientific study, based on actual case material, dealing with the level of sex expression before and after handicap.

After the authors completed their study from a wealth of material bearing upon sex behavior of polio victims new factors emerged casting an entirely new light on the aspects of human relationships.

The study reveals the intricate problems of sex life in the handcapped adult. This book should be of special interest to all personnel concerned with any phase of rehabilitation.

YEAR BOOK OF PHYSICAL MEDICINE REHABILITATION

—by *Frank H. Krusen M.D., George Deaver, M.D.* and *Earl C. Elkins M.D.* Published by the Yearbook Publishers Inc. 200 E. Illinois St. Chicago 11, Illinois. Price $5.00. 1950 Volume Published June, 1951. 328 pages, 134 illustrations.

This edition of this well-known authoritative book, has brought up to date, all new and important developments of the past 12 months in the field of Physical Medicine Rehabilitation. A most complete treatment of the field of Physical Medicine, this book has many interesting chapters for reference and education.

A cross section of some worth-while information covered in the book is as follows: New Weight Bearing Device, New Crutch from Sweden, Rubber Walking Heel, Corrective Shoe for Toe Drop, Corrective Therapy for the Normal Person, Rehabilitation of Paraplegics, Remedial Exercises and Rehabilitation of Prefontal Lobotomy Patients.

This book is of great value to all concerned with rehabilitation.

FROM OTHER JOURNALS—(cont'd from page 25)

Wesley M. Staton, "New Approach to Muscle Soreness," *The Athletic Journal,* XXXI:24 et seq:. May, 1951

Muscle soreness occuring in sports may be either of a general or localized type. The localized, or post-exercise, type may be due to minute ruptures in the connective tissue surrounding the muscle fibers, chemical irritation of the pain-nerve endings in the muscle fiber as a result of greater concentrations of lactic acid and other metabolites, and/or the physical irritation of sensory nerve endings of the muscle fiber brought about by the accumulation of excess fluid within and between the cells. Any attempt to minimize post-exercise soreness must aim at strengthening the connective tissue of the muscles or facilitating the elimination of waste products from the muscle fibers. The value of certain food elements in maintaining structural qualities of connective tissue has been well established. Recent experiments indicate that the administration of Vitamin C concentrate may be effective in reducing post-exercise muscle soreness. PJR

(Continued on page 30)

EVEREST & JENNINGS

Folding **WHEEL CHAIRS**

to help them enjoy outdoor living

Standard Universal

Chain Drive Wheel Chair

Wheel Chairs for all Needs and All Ages

Now, handicapped children can spend healthful hours in the sunny outdoors . . . with the aid of Everest & Jennings folding wheel chairs. They're smooth-riding over the bumps . . . and so easy to operate. They're comfortable, too, with form-fitting, hammock-construction seats. Everest & Jennings folding wheel chairs are a real boon to the corrective therapist. Indoors or out, they help patients move steadily in the direction of rehabilitation.

Everest & Jennings folding wheel chairs are specially designed of chrome-plated, welded tubular steel for lightness and strength. They fold compactly to ten inches in one simple motion.

Models illustrated are also available in standard sizes. Everest & Jennings will cooperate with you in selecting the wheel chairs best suited to your patients' needs.

Special Semi-Reclining Back With 8" Casters

See your dealer or send for Everest & Jennings Free Booklet on Invalid Aids.

EVEREST & JENNINGS

761 No. Highland Avenue

LOS ANGELES 38, CALIFORNIA

Directory of Stores Where Everest and Jennings Products May Be Rented.

ARKANSAS

Stover, Wm. T. Co., Inc.
721-723 Main Street
Little Rock, Arkansas
Tel. 5-1211

CALIFORNIA

Pacific Surgical Co.
5224 Santa Monica Blvd.
Los Angeles, Calif.
Olympia 2975

Wilson's Furniture
1309 J Street,
Sacramento, Calif.
Gilbert 3-5709

Henry Ford,
110 Lee Street,
Modesto, Calif.
Tel. 676 J

Physicians Supply Co.,
2950 Telegraph Ave.,
Oakland 9, Calif.
Twinoaks 3-7825

Bischoff's Surgical House,
166 South Second St.,
San Jose 13, Calif.
Cypress 35315

Bowers Ambulance Service,
430 E. Pacific Coast Hwy,
Long Beach 6, Calif.
Tel. 6-9703

COLORADO

Geo. Berbert & Sons, Inc.,
1524-1530 Court Place,
Denver 2, Colorado
Alpine—408

DELAWARE

General Limb & Brace Co.,
1914-1916 Market Street,
Wilmington, Del.
Tel. 5-3631 — 8-5896

FLORIDA

Anderson Surgical Supply Co.,
40-42 West Duval Street,
Jacksonville 1, Florida
Tel. 5-8391

Dowd Chair Rental & Sales
2245 Biscayne Blvd.,
Miami 37, Flarida
Miami 2-5152

Smith Oxygen Service,
131 S. Lakeside Dr.,
Lake Worth, Florida
Tel.—6633

GEORGIA

Orthopedic Service Co.
1960 Hardeman Ave.,
Macon, Georgia
Ivy—1412

Surgical Selling Company
139 Forrest Ave., N.E.
Atlanta, Ga.

Surgical Selling Company,
1312 Walton Way,
Augusta, Ga.

ILLINOIS

V. Mueller & Co.,
330 South Honore Street,
Chicago 12, Ill.
Seeley 3-2180

Chicago Wheel Chair Co.,
1971 West Ogden Ave.,
Chicago 12, Ill.
Seeley 8-1111

Basil Moore
314 So. 6th Street,
Marshall, Ill.
Tel.—334

INDIANA

Wm. C. Weir
878 Mass. Ave.
Indianapolis 4, Ind.
Capitol—8414

Akron Surgical House, Inc.,
217-221 No. Pennsylvania St.,
Indianapolis 4, Ind.
Lincoln—1506

Rickrich Surgical Supply Co.,
801-803 West Indiana St.,
Evansville 10, Ind.

KENTUCKY

Kay Surgical, Inc.
242 Jefferson St.,
Lexington, Ky.

MARYLAND

The Colson-Merriam Co.
1629 Aisquith St.,
Baltimore 2, Md.
Mulberry 2847-8

MASSACHUSETTS

T. J. Noonan Co.,
408 So. Huntington Ave.,
Boton 30, Mass.
Jamaica—2-8700

Surgical Supply,
20-22 Railroad Street,
Holyoke, Mass.
Holyoke—4425

Mass. Surgical, Inc.
224 Maple Street,
Holyoke, Mass.

P. L. Rider Company, Inc.
137-139 Chandler St.,
Worcester 2, Mass.
Tel. 2-7918

MICHIGAN

The G. A. Ingram Co.,
4444 Woodward Ave.,
Detroit 1, Mich.
Temple—1-6880

Real Courage Assn.,
Joe F. Sullivan, Mgr.
390 Cliff St.,
Battle Creek, Mich.
Tel. 2-3230

Medical Arts Surgical Supply Co.
20-22-24 Sheldon Ave., S.E.
Grand Rapids 2, Mich.
Tel. 9-8274

Dowd Chair Rental & Sales,
4848 Woodward Ave.,
Detroit 1, Mich.
Temple—3-3490

MISSOURI

Acme Chair Company,
3230 Washington,
St. Louis 3, Missouri
Franklin—5700

American Chair Rental & Sales Co.
3107 Gillham Road,
Kansas City 3, Missouri
Valentine—0063

MISSISSIPPI

Kay Surgical, Inc.
116 S. Roach St.,
Jackson 7, Miss.

MINNESOTA

V. Mueller and Co.,
Zumbro Hotel Building,
Rochester, Minn.
Tel. 6209

Brown & Day, Inc.
62-64 East 5th St.,
St. Paul 1, Minn.
Cedar—1845

NEW YORK

N. S. Low Co., Inc.,
224 East 23rd St.,
New York 10, N. Y.
Lexington 2-4120

J. Beeber Company, Inc.
838 Broadway,
New York 3, N. Y.
Al 4-3510

Social Surgical Appliance Center,
838 Broadway,
New York 3, N. Y.
Al 4-3509

Institutional Products Corp.,
161 Sixth Ave.
New York 13, N. Y.
Al 5-3700

Mercury Service Inc.,
1333 York Ave., Cor. E. 71 St.,
New York 21, N. Y.
Regent 7-7740

Lennon-Peek Surgical Co.
30 Fourth Ave., Cor. Pacific St.,
Brooklyn, N. Y.
Main 5-6886

Low Surgical Co., Inc.,
135-21 Northern Blvd.,
Flushing 54, N. Y.
Flushing 3-7747

Professional Surgical Supply, Inc.
74-19 Roosevelt Ave.,
Jackson Heights 72, N. Y.
Havemeyer 4-0300

Central Surgical Service, Inc.
1857 Mott Ave.,
Far Rockaway, N. Y.
Fa—7-3311, 6855

Nassau Surgical Appliance Co.
362 Fulton Ave.,
Hempstead, N. Y.
Hempstead 2-3460

Argus Surgical Stores,
116 Fourth Ave.,
Mount Vernon, N. Y.
Mount Vernon 7-1886

Elmira Drug & Chemical Co.
157 Baldwin St.,
Elmira, N. Y.
Tel. 6289

Monroe Surgical,
93 Monroe Ave.,
Rochester 7, N. Y.
Hamilton 6710

Physicians Supply Corp.
12-16 Spring St.,
Rochester 14, N. Y.
Locust 3053

Central Surgical Service, Inc.,
1857 Mott Avenue,
Far Rockaway, N. Y.
Fa 7-3311
Fa 7-6855

Nassau Surgical Appliance Co.,
362 Fulton Ave.,
Hempstead, N. Y.
Hempstead 2-3460

Argus Surgical Stores,
116 Fourth Ave.,
Mount Vernon, N. Y.
Mount Vernon 7-1886

Monroe Surgical
93 Monroe Ave.,
Rochester 7, N. Y.
Hamilton 6710

Martin J. Nunn
418 N. George Street,
Rome, N. Y.
Tel. 842

NEW YORK

Jeffrey-Fell Company
1700 Main Street,
Buffalo 9, N. Y.
Garfield 1700

Low Surgical Co., Inc.,
135-21 Northern Blvd.,
Flushing 54, N. Y.
Fl 3-7747
Branches—
999 3rd Ave.,
520 Amsterdam Ave.,
N. Y. C.

National Hospital Supply Co., Inc.
38 Park Row,
New York 7, N. Y.
Worth 2-4947

Higgins Surgical Supplies, Inc.
1134 State St.,
Schenectady 4, N. Y.
Tel. 2-7064

Jeffrey-Fell Company,
1700 Main St.,
Buffalo 9, N. Y.
Garfield 1700

Dowd Chair Rental & Sales,
392 Franklin Street,
Buffalo, N. Y.
Cleveland 3335

NEW JERSEY

Amsterdam Bros.,
1060 Broad Street,
Newark 2, N. J.
Mitchell 2-0207

Wm. R. Walsh Co.,
80 Avenue C,
Bayonne, N. J.
Bayonne 3-2881

Doctors Service Co.,
73 Lafayette Street,
Paterson 1, N. J.
Lambert 3-6603

Cosmevo Surgical Spppiy Co., Inc.
236 River St.,
Hackensack, N. J.
Diamond 3-5555

Burlington Surgical Appliance Service,
314 High Street,
Burlington, N. J.
Burlington 3-0052

NORTH CAROLINA

Wachtel's, Inc.
65 Haywood St.,
Asheville, N. C.
Tel. 3-7617

J. E. Hanger of N. C., Inc.
801 W. Morgan St.,
Raleigh, N. C.
Tel. 3-1811

Carolina Surgical Supply Co.,
121-123 S. Wilmington St.,
Raleigh, N. C.
Tel. 3-8631

Winchester Surgical Supply Co.
119 East Seventh St.,
Charlotte 1, N. C.
Tel. 2-4109

OHIO

Leicy's, Inc.
1531-33 West Market St.,
Steubenville, Ohio
Tel. 2-5393

Toledo Ambulance Service, Inc.
435 Melrose Ave. at Collingwood Blvd.,
Toledo 10, Ohio
Adams 4123

Columbus Chair Rental & Sales
235 North High Street
Columbus 15, Ohio
Tel. Main 2722

OKLAHOMA

Raymond Furniture Co.
314 West Okmulgee Ave.,
Muskogee, Okla.
Tel. 3708

Oklahoma Physicians' Supply Co.
132 W. 3rd
Oklahoma City, Okla.
Tel. 3-3968

Mid-Continent Surgical Supply Co.
1330 South Boston,
Tulsa, Okla.
Tel. 2-8169

PENNSYLVANIA

Heyl Physicians Supply Co.
22 West Ninth St.,
Erie, Pa.
Tel. 2-6785

Harrisburg Surgical Co.
1008 North Third St.,
Harrisburg, Pa.

Allied Surgical Supply Co., Inc.
137 N. Duke St.,
Lancaster, Pa.
Tel. 3-4804

Lancaster Surgical Supply Co.
148 N. Duke St.,
Lancaster, Pd.
Tel. 2-3175

William Tolcke,
2262 N. 7th Street,
Philadelphia 33, Pa.
Fremont 7-3667

The Colson-Merriam Co.,
301 So. 11th St.,
Philadelphia 7, Pa.
Pennypacker 5-3363

Dowd Chair Rental & Sales,
138 So. Highland Ave.,
Pittsburgh 6, Pa.
Montrose 1-5355

SOUTH CAROLINA

Powers & Anderson of S. C.
1318 Taylor St.,
Columbia, S. C.
Tel. 4-1639

TENNESSEE

Kay Surgical, Inc.
1144 Madison Ave.,
Memphis 1, Tenn.
Tel. 7-7415

Mid-South Oxygen Co.,
651 Jefferson Ave.,
Memphis 3, Tenn.
Tel. 8-4228

TEXAS

Melton-Clark, Inc.
515 W. 6th St.,
Amarilla, Tex.
Tel. 3-6765

Surgical Selling Co.,
819 West Drew St.,
Houston, Tex.

Blackwell Matress Co.
2610 Texas Ave.,
Lubbock, Tex.
Tel. 7962

VIRGINIA

Wm. P. Swartz Jr. & Co., Inc.,
421 Luck Ave.,
Roanoke, Va.
Tel. 3-4483

DISTRICT OF COLUMBIA

The Colson-Merriam Co.
703 Transportation Bldg.,
Washington 6, D. C.
National 0011

WASHINGTON

Shipman Surgical Co.
313 University St.,
Seattle 1, Wash.
Main 6363

WISCONSIN

Gardie A. Lee
402 West Madison St.,
Eau Claire, Wis.
Tel. 7758

Roemer Drug Co.
606 No. Broadway,
Milwaukee 2, Wis.
Ma. 8-0916

House of Bidwell, Inc.
604 North Water St.
Milwaukee 2, Wisconsin
Broadway 2-4368 — 2-1619

Capitol Orthopedics
520 South Park St.
Madison, Wisconsin
Madison 6-5303

Directory of Stores Where Everest and Jennings Products May Be Rented.

CALIFORNIA

Abbey Rents
600 S. Normandie Ave.,
Los Angeles, Calif.
DUnkirk 4-5292

Abbey Rents
1761 American Ave.
Long Beach, Calif.
L. B. 6-6264

Abbey Rents
2895 El Cajon Blvd.,
San Diego, Calif.
Talbot 1-8151

Abbey Rents
1314 Post Street
San Francisco, Calif.
GRaystone 4-2525

Abbey Rents
2315 Broadway
Oakland, Calif.
HIgate 4-8181

OREGON

Abbey Rents
1000 E. Burnside
Portland, Ore.
FILmore 5001

WASHINGTON
Abbey Rents
1000 Pike Street
Seattle, Wash.
SEneca 5040

TEXAS
Best Rentals—4002 S. Main
Houston, Texas
KEystone 4416

MISSOURI
Abbey Rents
4041 Broadway
Kansas City, Mo.
JEfferson 5200

Abbey Rents
3432 Lindell Blvd.,
St. Louis, Mo.
NEwstead 1918

COLORADO
Abbey Rents
350 Broadway
Denver, Colo.
PEarl 4651

MINNESOTA
Abbey Rents
310 S. Ninth Street
Minneapolis, Minn.
LIncoln 8931

FROM OTHER JOURNALS—(cont'd from page 27)

SIDNEY A. PORTIS, M.D., IRVING H. ZITMAN, M.D. and CHARLES H. LAWRENCE, M.D., "Exhaustion in the Young Business Executive," *Journal of the American Medical Association*, 144: 1162-66, December 2, 1950.

The toll of death and disability in the management group is excessive. In a group of 50 executives studied only 5.4% were considered to be without any physical defects. Psychological studies have revealed that executives with somatic symptoms are as a rule dependent men with strong feelings of insecurity and inferiority. Their drives to succeed are a reaction to their intense fears of being inadequate. Hostility, aggression, fear of failure and lack of capacity for getting pleasure out of life are marked. Fatigue is one of the outstanding complaints. This may call for psychological or psychiatric counseling, but dietary measures may also be necessary. A high percentage of executives suffer from relative hypoglycemia. When an inadequate amount of dextrose circulates in the blood, the brain does not function properly. Breakfast is one of the most important meals of the day, because it comes after a fast of 12 or 14 hours and the body has only sufficient dextrose reserve for 12 hours. The daily diet should include cereal, bread, meat, poultry or fish, eggs, vegetables, potatoes, fruits, milk, water, fats and fruit, pudding, fruit gelatin, cake or cookies for desert. Sugar, candy, pie, pastries, jelly, honey, jam, syrup, alcoholic and carbonated beverages should be avoided.

PJR

News and Comments

CONVENTION

Three Medical Rehabilitation Field Supervisors, Lee Edman, Clement McNamara and Dave Shaw were in attendance at the Los Angeles meeting of our association. Mac was elected as one of the Vice Presidents. They were all in fine "fettle" and active in the many discussions.

GENERAL

A recent trip to New York to confer with Dr. Abramson and the C. T. staff, in reference to educational courses, gave Dr. Davis an opportunity for a quickie visit to the Eleanor Delano Roosevelt Hospital at Montrose, New York. Corrective Therapists would get a real inspiration by visiting this hospital and seeing a most progressive program instituted under the medical direction of Dr. Meislin. Tom Fleming, our new president, is the Chief C. T. and has a very fine and complete staff. Dr. Harris, formerly Manager of the Brentwood, VAH, Los Angeles, is the competent manager.

The term "Corrective Therapy" is getting around the world. In the February, 1951 issue of Zentralblatt Fur Die Gesomte Neurologie and Phychiatrie, published in Berlin, reference is made to the development of Corrective Therapy in the Veterans Administration. An article by Drs. Knudson and Davis is abstracted. Hold your breath! The word for Physical Medicine Rehabilitation Service is "Wiederherstelhingsbehandling. Corrective Therapy is not so bad: Korrektionstherapie.

TEACHERS COLLEGE, COLUMBIA UNIVERSITY, ANNOUNCES A NEW GRADUATE PROGRAM FOR REHABILITATION SPECIALISTS

The need for well-trained rehabilitation specialists in recreation and physical education is being increasingly felt throughout the nation. To help prepare members of rehabilitation teams for hospitals and rehabilitation centers, the Health and Physical Education department at Teachers College, Columbia University, has intensified its program in this field.

The program is given in cooperation with the New York School for Social Work, the departments of Music, Art, Guidance and Special Education at the College, and the Department of Medicine and Physical Rehabilitation of the Bronx Veterans Hospital in New York.

An important part of this program is the field work, clinical observation and practice, some of which is done at the Bronx Veterans Hospital in New York. This aspect of the program was set up with the cooperation and support of Dr. Arthur Abrahamson. Here and at Bellevue Hospital, the Goldwater Hospital in the metropolitan New York area, and at Hillside Hospital and New York-Cornell Westchester Division nearby, students will observe and, under medical supervision, participate in rehabilitation programs.

In addition to actual experience in the field, students need training in handling people, in group work and social work as well as in physical medicine and phychiatry. They need this background in addition to actual skills in recreation or physical education.

According to Prof. Josephine L. Rathbone, director of the program, background in all these fields is necessary in the training of professional personnel who will be able to work under medical supervision, to pass on advice to volunteers, and to plan and carry out programs in physical education and recreation in rehabilitation.

Both recreation and physical education students under the program, must take courses in educational theory, applied anatomy and kinesiology, physiology of exercise, corrective physical education in medical practice, and physical education and recreation in rehabilitation.

The core of the program for specialists in recreation is a series of courses in the principles and programs in recreation, personal development through group recreation activities, elementary psychiatry, and social group work. Physical education students are required to take courses in the principles of, and programs in physical education, techniques for functional living with disabilities, and in growth and development.

The program for these rehabilitation students also covers courses in the psychology of the physically handicapped, medical and social problems of illness, methods of relaxation and a series of courses in specific sports, games, arts and crafts or music, which are designed to improve the student's skill and teaching ability.

Because this is a graduate program leading to a master's degree, only students who have studied physical education and related subjects as undergraduates are eligible. Students should have had courses in personal hygiene, anatomy, physiology, first aid, general psychology, sports and games, gymastics and recreational activities.

Acting on the medical advisory committee for the program are five staff members of Columbia University's College of Physicians and Surgeons. They are Dr. Frederick S. Craig (Orthopedics); Dr. Justin L. Greene (Neurology); Dr. Milton R. Sapirstein (Psychiatry); Dr. David Seegal (Chronic diseases); and Dr. William Benham Snow (Physical Medicine and Rehabilitation).

APPLICATION FOR ACTIVE MEMBERSHIP

ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

(Address Louis M. Frazier, Jr., 736 Graham St., Memphis, Tennessee)

NAME _____ DATE _____

ADDRESS _____
(City) (Zone) State

EDUCATION _____
(College) (Degree) (Major Subjects)
(Required—A Major in Physical Education)

TRAINING AND EXPERIENCE IN REHABILITATION _____
Required—One Year Under Direct Supervision of a Doctor of Medicine

_____

_____

REFERENCES 1. _____
Name Position Location

2. _____

_____
(Signature of Applicant)

APPLICATION FOR ASSOCIATE MEMBERSHIP

NAME _____

ADDRESS _____

PROPOSED BY _____

CERTIFIED

John N. Eschen Co., Inc.

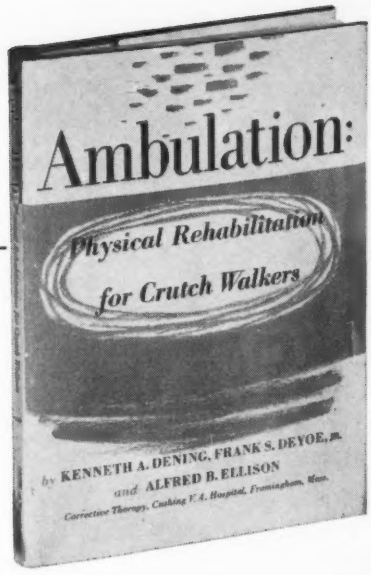
156 East 116th Street
New York 29, N. Y.

Manufacturers of Latest Types of Prosthetic Appliances for all amputations and malformations, properly and comfortably fitted.

Illustrated catalogue
sent upon request

*"You can go out and wear them,
but you can not wear them out."*

Just Published...


Ambulation:
Physical Rehabilitation for Crutch Walkers
by KENNETH A. DENING, FRANK S. DEYOE, JR.
and ALFRED B. ELLISON
Corrective Therapy, Cushing V.A. Hospital, Framingham, Mass.

AMBULATION

PHYSICAL REHABILITATION FOR CRUTCH WALKERS

by Kenneth A. Dening, Frank S. Deyoe, Jr. and Alfred B. Ellison, Corrective Therapy, Cushing V.A. Hospital, Framingham, Mass.

Written for the civilian handicapped and for those interested in the rehabilitation of such persons, this authoritative new work presents a tested program designed to carry the patient from bed to a point of physical independence. Reflecting the wide experience of three expert corrective therapists, Ambulation explains their complete training course for paraplegics so graphically and simply that it may be followed by the patient in his own home or in a hospital where rehabilitation facilities are not available. By means of numerous photographs and crystal-clear instructions it guides the patient by logical progression from bed stage through self-care activities to the attainment of the erect position on braces and crutches. It explains the proper use of crutches in ascending and descending stairs, getting in and out of vehicles, etc., and offers a program of bed and mat exercises designed to develop muscles specially used in crutch walking.
For the lay instructor, Ambulation offers a guide and important notes on how to assist the disabled and teach the various activities.

Ambulation also includes an Introduction by Dr. Donald Munro, Chief of Neurosurgery, Boston City Hospital. In his Introduction, Dr. Munro says: "The authors well understand the problems that confront the spinal invalid. Their book is authoritative and reliable. It should be in the hands of every psychiatrist and physiotherapist, corrective therapist, or physical reconditionist who attempts to set up a program of physical rehabilitation for paraparetics and paraplegics.

TABLE OF CONTENTS — Introduction • Instructor's Information • Bed Activities • Wheelchair Activities • Mat Exercises • Preliminary Ambulation Training • Crutch Gaits • Changing Direction and Going Through Doorways • Ramps • Stairs • Curbs • Chairs • Automobiles • Moving Up and Down from the Floor • Bibliography • Index

At Your Bookstore or Order Direct

USE THIS COUPON

Funk & Wagnalls Company, Dept. JAP-651
153 East 24th Street, New York 10, N. Y.
Please send me a copy of Ambulation, Physical Rehabilitation for Crutch Walkers at $3.50.

I enclose ☐ check ☐ money order.

Name_____

Address_____

City_____

Zone_____ State_____

If not delivered in 5 days
return to
Louis M. Frazier, Jr.
736 Graham Street
Memphis, Tennessee

State Universities of Iwa
Libraries
Serials Acquisitions
Iowa City, Iowa

SEC. 34.66 P. L. & R.
U. S. POSTAGE
PAID
MEMPHIS, TENN.
PERMIT NO. 143

PUBLISHED 1951

PROGRESSIVE RESISTANCE EXERCISE

TECHNICAL AND MEDICAL APPLICATION

By Thomas L. DeLorme, M.D. and Arthur L. Watkins, M.D.

Foreword by Joseph S. Barr

Contributions by Frances A. Hellebrandt, M.D., Francis E. West, M.D., J. Roswell Gallagher, M.D.

This new manual for physicians, surgeons, physical therapists, and corrective therapists presents the physiological basis for the technic for the therapeutic exercise of muscles to restore them to maximum functional efficiency.

It applies such corrective exercises to the aftercare of fractures; other injuries of muscles, bones and joints; and the aftercare of orthopedic surgical patients.

It describes in detail its particular value in the treatment of Poliomyelitis and in chronic neurological disorders such as multiple sclerosis, Parkinson's disease and hemiplegia.

It discusses the highly satisfactory results which have followed use of such exercise in the rehabilitation of arthritic patients, and in treating industrial injuries as well as athletic injuries.

The numerous drawings and photographs of specific exercises serves as a working manual for technicians. All technics are illustrated and described.

"In this small book the authors have tried to include in concise and practical form the principles of the treatment, indications for its use, specific instructions about the exercises to be used, and the results to be expected."

THE JOURNAL OF BONE AND JOINT SURGERY, April 1951

"The bulk of the book is used to describe and profusely illustrate special exercises for each joint. Progressive Resistance exercises are particularly useful in injuries to joints, muscles and ligaments."

F. W. Hark, M.D., in THE CRIPPLED CHILD, June 1951

"This is a very useful reference book which should be in every physical and occupational therapy training school and in every physical medicine department. Illustrations represent at least one-half of the book."

WILLIAM BENHAM SNOW, M.D., March 15, 1951

"The book supplies a real need and will be very popular. Surely every physiatrist and all the technical personnel in a department of physical medicine will wish to have a copy of this book. It will also be very helpful to orthopedists, surgeons, and neurologists."

ARCHIVES OF PHYSICAL MEDICINE, March 1951

CONTENTS

Preface—Foreword (by Joseph S. Barr, M.D.)—Introduction — Physiology (by Frances A. Hellebrandt, M.D., Med. Coll. of Va.)—Principles—Technics—Fractures—Knees (by Francis E. West., M.D., Univ. of Cal.)—Hips—Neurological Conditions—Medical Conditions—Adolescents (by J. Roswell Gallagher, M.D., Wesleyan Academy, Middletown, Conn.)—Index.

238 Pages | 89 Illustrations | Publ. Feb. 1951 | $5.00 Postpaid

APPLETON-CENTURY-CROFTS, INC., 35 W. 32nd STREET, NEW YORK 1, N. Y.

Send me_____copies of DeLorme and Watkin's PROGRESSIVE RESISTANCE EXERCISE and charge to my account.

City_____ Postal Zone_____ State_____

Name_____ Street_____